WATER SUPPLY REVIEW
and
SNOW SURVEY SUMMARY

ALBERTA ENVIRONMENT
TECHNICAL SERVICES DIVISION

Prepared by:
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and
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1981 - 82

COVER PHOTO
ALBERTA GOVERNMENT PHOTO

The Water Supply Outlook and Snow Survey Bulletin is issued four times each year for March 1, April 1, May 1 and June 1. Water Supply updates are also published for July 1 and August 1, with a summary in October.

Units of Measure

Parameter	Unit of Measure (metric)	Conversion to Imperial Units
Snow depth	centimetres	2.54 cm = 1 in.
Water equivalent	millimetres	25.4 mm = 1 in.
Elevation	metres	1 m = 3.28 ft.
Streamflow	cubic metres per second	1 m^3/s = 35.3 cfs
Volume of water	cubic metres	1 x $10^6 m^3$ = 811 ac-ft

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ACKNOWLEDGEMENTS

The Alberta River Forecast Centre and the Survey Branch of Alberta Environment wish to acknowledge the Alberta Forest Service, Water Survey of Canada, and Atmospheric Environment Service for their assistance in providing precipitation* and streamflow data* for the preparation of this report.

* Note: It should be noted that the natural flows as calculated in Table 1, as well as the hydrographs presented in each basin section, is based on tentative hydrometric record and is subject to change. The snow survey data and supplementary storage guage reading as found in Appendix A is final data and is not subject to change.

WATER SUPPLY REVIEW

Weather, Snowpack and Streamflow Conditions Review

Precipitation during the winter of 1981-82 was highly variable throughout Alberta as shown by Figures 2 to 5. As of March 1, heavy snowpack conditions existed on the plains area in the vicinity of Grande Prairie, Slave Lake, Edmonton, Red Deer and Edson. The snowpack in the foothills and front range areas of the Bow River basin was much below normal. This was also true to a lesser degree for the Oldman River and Red Deer River basins. Heavy spring precipitation substantially increased the snowpack in these low snowpack areas.

Spring snowmelt occurred later than normal due to cool weather during the first part of April. Despite this cooler weather, runoff was heavy in the Grande Prairie, Edmonton, Whitecourt and Red Deer areas (Figure 1) and some flooding of low lying areas was reported.

Mountain runoff also began later than normal. By June 1 heavy snowpacks in the high mountains still existed in the Bow basin, creating the possibility for flooding along the Bow River. Fortunately cooler temperatures prevailed during the main snowmelt period, and peak flows were only moderately high.

Summer precipitation was below normal in the headwaters of the Oldman and Bow Basins as shown in Figures 6 through 9. Below normal summer precipitation also occurred in the Northern part of the province. Elsewhere, summer precipitation was near normal except for the Grande Prairie, Edson, Rocky Mountain House and Red Deer areas where it was above normal. Above normal precipitation in these areas was a result of several major storms during July and the first part of August.

The Red Deer area reported flooding from a storm which occurred July 1 to 5. The Grande Prairie area was hit hard between July 13 to 15 and major flooding was reported. A second storm during the first week of August also dumped 100 to 150 mm of precipitation on this area but did not cause any major flooding.

The water supply conditions during 1982 for each river basin in central and southern Alberta are discussed individually on the following pages. Table 1 is a summary of water supply for these basins.

The snow survey data found in Appendix A are final data. It should be noted, however, that the natural flow data as calculated for this Table, as well as the streamflow data for the hydrographs accompanying each section, are based on tentative hydrometric records and are subject to change.

Water Storage Situation

As of October 1, 1982, storage in various major hydro-electric and irrigation reservoirs was at normal levels. The only exception to this is Ridge Reservoir which was drawn down so maintenance work could be carried out this winter. The St. Mary Reservoir is being held above normal levels to compensate for the loss of storage in Ridge.

In the spring of 1982, several hydro-electric and irrigation reservoirs were below normal due to either maintenance work last winter or high demand during the spring period. Streamflow this season was sufficient to bring all reservoirs up to their normal operating levels by July 1, and to keep them there for the remainder of the season.

Table 2 is a summary of water storage conditions as of October 1, 1982.

OLDMAN RIVER BASIN

Weather, Snowpack, and Streamflow Conditions Review

Snowpack conditions as of March 1, 1982 were highly variable throughout the Oldman basin. Despite below normal winter precipitation throughout the basin, the snowpack was normal or slightly above normal in some areas. Last winter was colder than normal and the chinooks which usually frequent the basin were not as prevalent. As a result, streamflow was below normal as can be seen by the following hydrographs. Foothill streams, such as Willow Creek, froze and communities accustomed to obtaining water from Willow Creek had to resort to other sources.

As of April the snow had already disappeared from most of the plains areas of the basin. At mid-month a heavy snowfall occurred in the Lethbridge-Medicine Hat-Milk River Ridge area but this snow was quickly absorbed into the ground without any significant runoff. By the third week of April, spring runoff was complete.

Temperatures for the most part in March and April were below normal. The mountain snowpack, despite below normal precipitation had not changed significantly.

May precipitation was above normal on the plains but much below normal for most of the mountainous area. Temperatures continued to be below normal. Mountain snowmelt from areas below the elevation of 2000 metres began by mid-month. Snow at higher elevations melted more gradually, keeping flows high for the entire month of June.

No major precipitation events occurred in the Oldman basin this summer. Streamflows dropped rapidly during July, and by August most streams and rivers were flowing at slightly below normal levels. This trend continued on into the fall.

Figures 2 through 9 summarize winter and summer precipitation as it occurred this past year.

Water Supply Volume Review

In the spring of 1982, forecasts based on current conditions pointed to below normal runoff in the plains area and normal runoff from the mountainous area. No water supply problems were therefore predicted.

Despite March's heavy mid-month snows in the plains, the runoff from the plains areas was only 60-70 percent of its normal values.

Low spring time temperatures had the effect of delaying runoff from mountainous areas and keeping flow throughout June high.

No major precipitation events occurred in the Oldman basin this past summer. As a result of the below normal summer precipitation (see Figure 8), the water supply picture deteriorated gradually over the summer. Tentative hydrometric records show that the total natural flow for the months of April through September ranged from 73 percent of normal for the Oldman near Fort MacLeod to 97 percent of normal for the St. Mary River. Oldman at Lethbridge's total natural flow was only 76 percent of normal. A detailed summary for water supply in the Oldman basin can be found in Table 1.

Water Storage Review

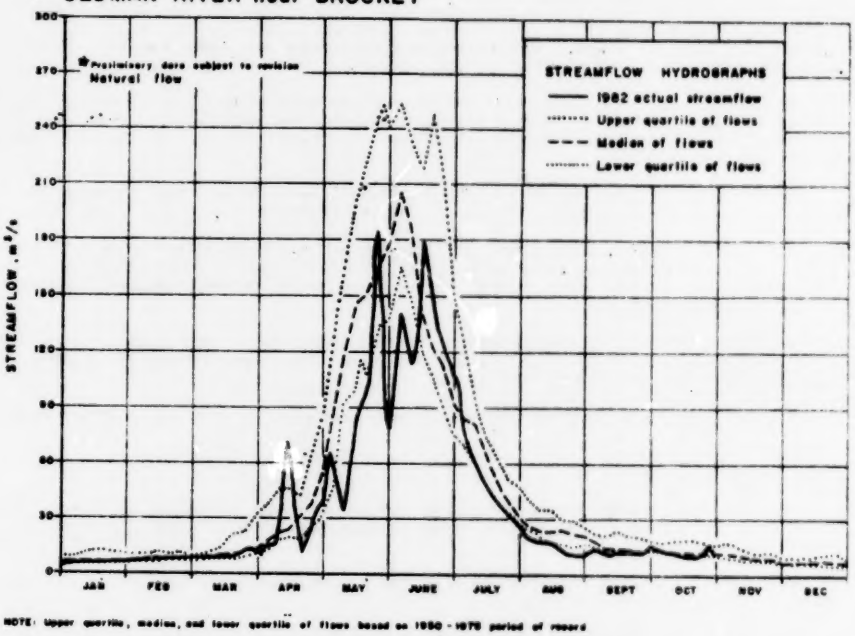
Water in storage as of March 1 was at normal levels for the St. Mary and Ridge reservoirs. In the fall of 1981 both Ridge and Waterton reservoirs had been drawn down so repair work could be carried out and therefore they were at below normal levels.

Runoff from the plains area did not significantly change the overall storage situation but by June 1 mountain runoff restored all reservoirs to their normal levels. Runoff was such that the reservoir operators were able to maintain normal storage levels in the system throughout the heavy demand months of June and July. The water supply situation was good all season.

Repair work is required on Ridge reservoir this winter and therefore it was drawn down this fall. St. Mary Reservoir is above normal, while Waterton and Chin reservoirs are at their normal levels.

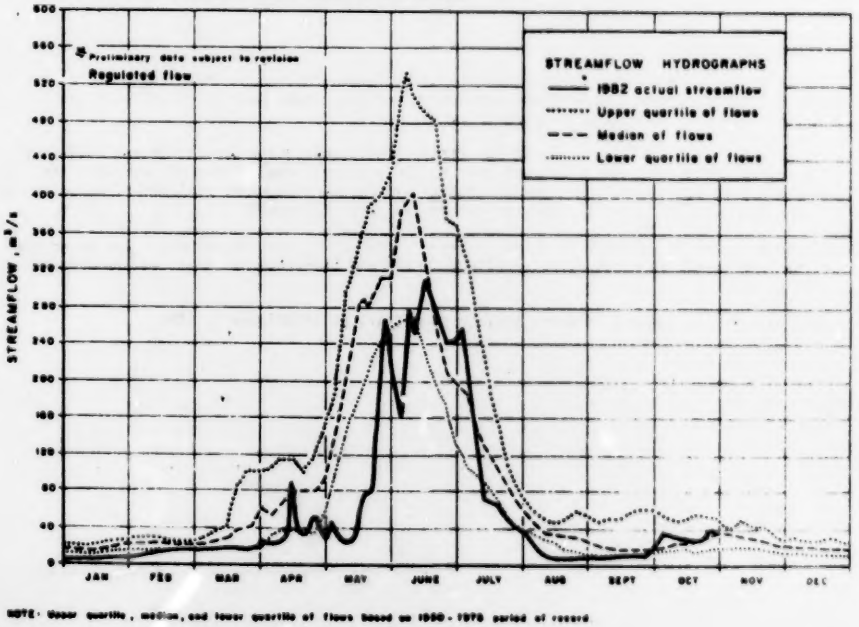
Table 2 is a summary of water storage conditions as of October 1, 1982.

OLDMAN RIVER near BROCKET



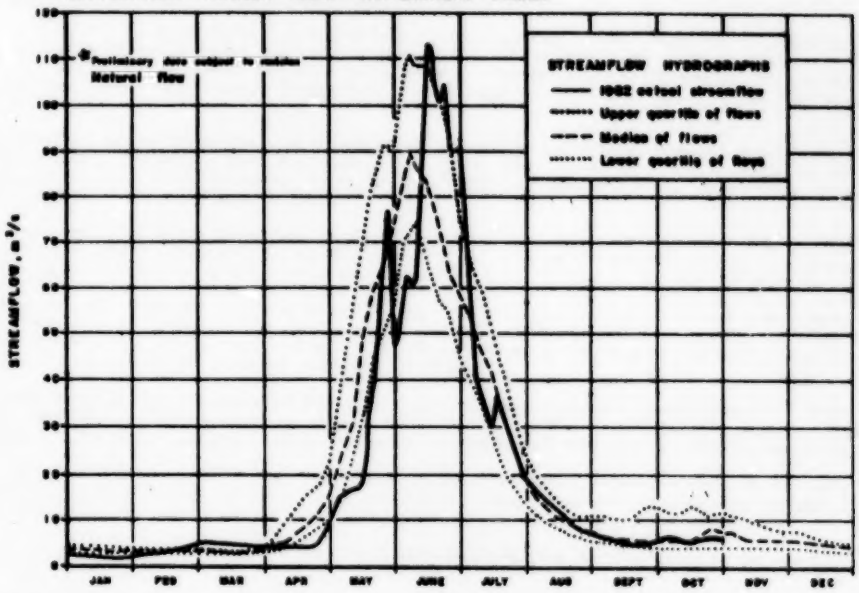
NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1978 period of record

OLDMAN RIVER near LETHBRIDGE



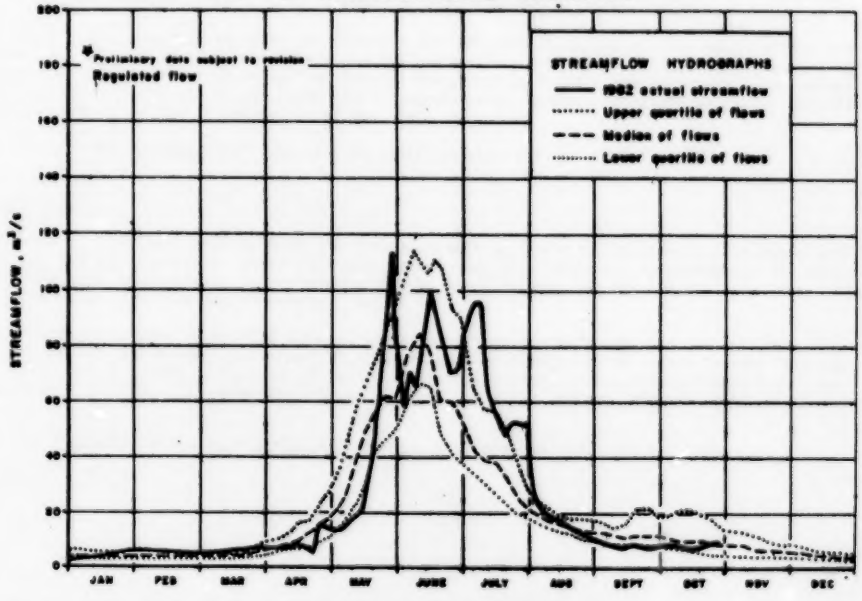
NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1978 period of record

WATERTON RIVER near WATERTON PARK



NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1979 period of record.

ST. MARY RIVER at INTERNATIONAL BOUNDARY



NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1979 period of record.

BOW RIVER BASIN

Weather, Snowpack and Streamflow Conditions Review

Snowpack conditions as of March 1 were highly variable thoughout the Bow River basin. Conditions at high elevations along the Continental Divide were normal. Along the front range and the foothill areas of the basin, the snowpack was much below normal. Farther out on the plains the snowpack improved to near normal conditions. Streamflow for the basin was normal as shown in the following hydrographs.

Precipitation during March for the front range, foothills and plains area was above normal. Precipitation along the divide kept the snowpack in these areas normal to slightly above normal. Plains area runoff which normally begins around the end of the month was delayed by colder temperatures and wasn't over until the third week in April.

April precipitation in the headwaters of the Elbow and Highwood River basin substantially improved the snowpack conditions. Elsewhere in the basin, April was a month of below normal precipitation. Streams continued to flow at normal levels but dropped to below normal in May due to below normal spring runoff conditions. Streamflow values for the plains and foothills areas during May were estimated at only 50-75 percent of their normal values. Precipitation during May ranged from slightly below to slightly above normal in the area west of Calgary but in the southeast portion of Calgary precipitation during May was well above normal. Temperatures were cool throughout the month, resulting in very little depletion of the snowpack at higher elevations.

By early June the mountain snowpack was still heavy, thereby creating a possibility for flooding along the Bow River. Fortunately, as streams were rising rapidly from mountain snowmelt, the temperatures dropped and the resulting peak flows were only moderately high with no flooding occurring.

Peak snowmelt had occurred by the third week in June and flows dropped sharply during July. Streamflow for the Bow River at Banff was normal or slightly above normal but for most other streams in the basin late summer and fall flows fell to below normal levels.

Figures 2 through 9 summarize the winter and summer precipitation as it occurred in the Bow basin this past year.

Water Supply Volume Review

In the spring of 1982, forecasts based on current conditions pointed to normal runoff for the Bow River at Banff but much below normal runoff for streams originating along the front range such as the Elbow and Highwood Rivers. No water supply problems were anticipated.

Above normal precipitation along the front range during the months of March, April and May improved the water supply picture for these areas. Elsewhere the water supply situation remained much the same. Precipitation during the June - September period, however, was below normal.

Total summer precipitation as shown by Figure 8 was slightly below normal for most of the Bow Basin. This, coupled with near normal winter precipitation along the Continental Divide, produced 99 percent normal runoff (May 1 to September 30) for the Bow River at Banff. However, much below normal winter precipitation in 1981-82 in the Elbow and Highwood basins resulted in runoff which was only 64 and 55 percent respectively of its normal total for these two basins.

Table 1 is a detailed summary of natural flow runoff volumes for the summer of 1982.

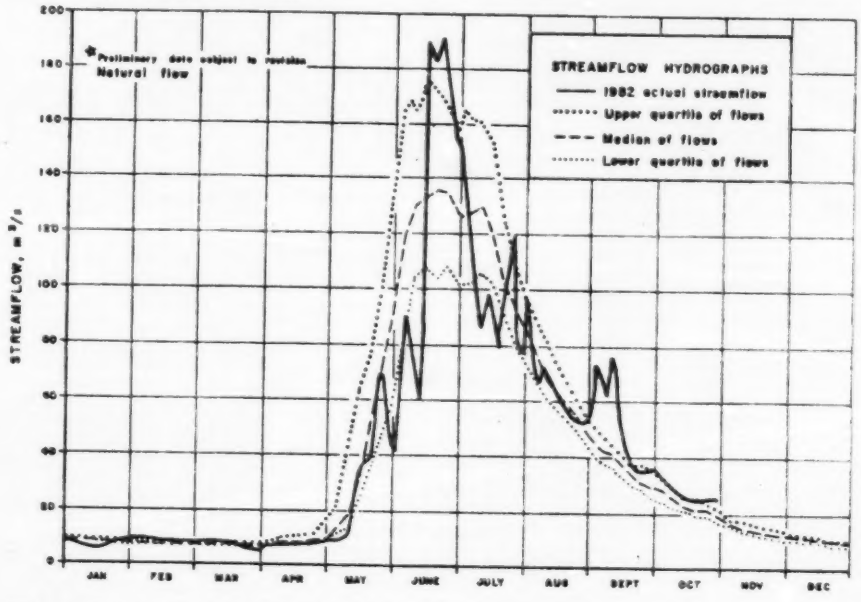
Water Storage Review

As of March 1, 1982 most reservoirs in the Bow basin were at their normal levels. Two exceptions were Spray and Travers reservoirs which had been drawn down last fall for maintenance. No water storage problems were anticipated. Heavy demands during March lowered the Upper Kananaskis reservoir while all other reservoirs remained at constant levels.

By May 1 all irrigation reservoirs were at their normal operating levels but all of Trans Alta Utilities' reservoirs in the Bow basin except for Lake Minnewanka were at below normal levels. Healthy June flows ended the low water situations in all of Trans-Alta's reservoirs and they remained at their normal operating levels for the remainder of the season. No water storage problems occurred during 1982.

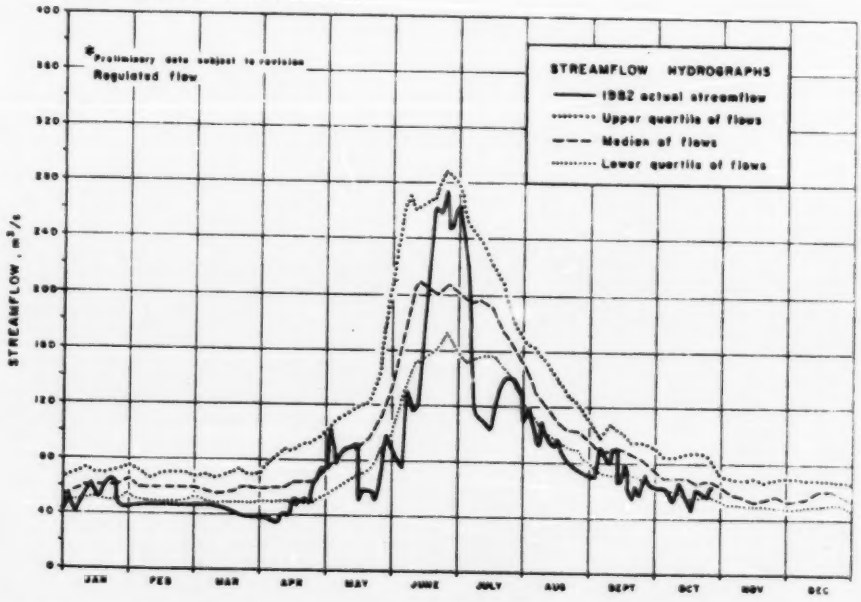
Table 2 is a summary of the available water storage as of October 1 for the Bow River basin.

BOW RIVER at BANFF



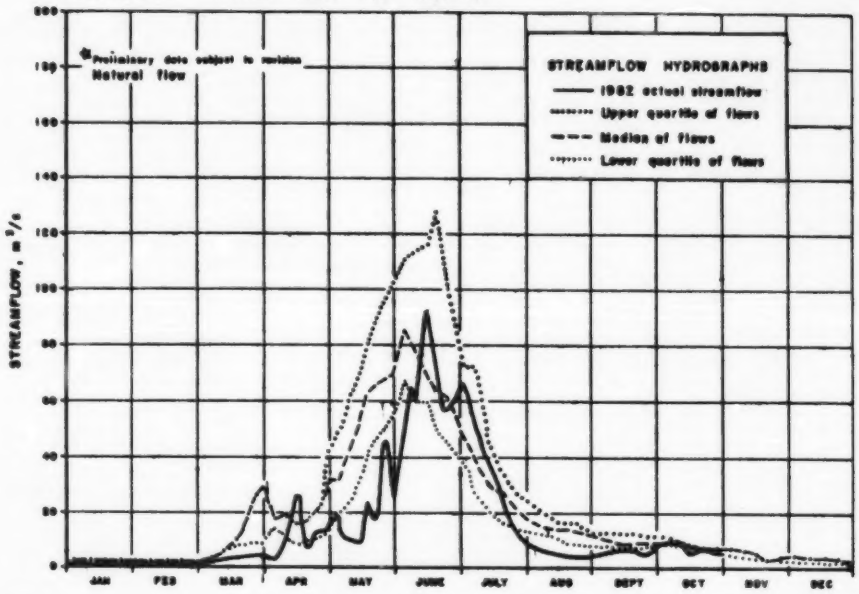
NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1978 period of record.

BOW RIVER at CALGARY



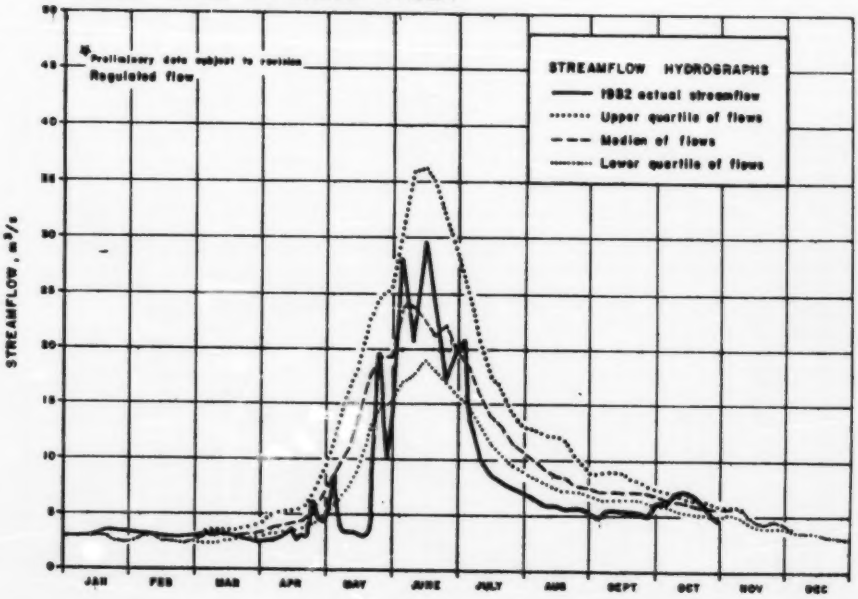
NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1978 period of record.

HIGHWOOD RIVER near the MOUTH



NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1979 period of record.

ELBOW RIVER at BRAGG CREEK



NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1979 period of record.

RED DEER RIVER BASIN

Weather, Snowpack and Streamflow Conditions Review

As of March 1, the snowpack conditions in the Red Deer River basin showed a marked improvement over the last couple of years. The lack of chinook conditions during the winter left a normal to above normal snowpack on the ground in the foothills and plains areas of the basin. Snowpack conditions in the headwaters were below normal. Streamflow conditions as shown by the following figures were below normal in January but recovered to normal rates in February.

March precipitation was heaviest in the foothills and plains areas keeping the snowpack above normal. The Red Deer headwaters still had a below normal snowpack.

April was a very dry month for this basin. Plains area runoff occurred during the last half of April and was heavier than normal. Overbank flow was reported for some streams. Streams throughout the basin quickly receded and by mid-May were flowing at below normal levels due to the dry weather and below normal temperatures. Warmer temperatures during the last week of May started the mountain snowmelt runoff. Mountain snowmelt runoff was high during the last three weeks of June and began to drop off by July. A major storm occurred during the first week of July followed by a smaller storm at mid-month which kept flows high for all of July. Flooding on the Blindman River, Medicine River, and other smaller streams in the area occurred from this first storm. Streamflows remained at normal or above normal levels for the remainder of the season.

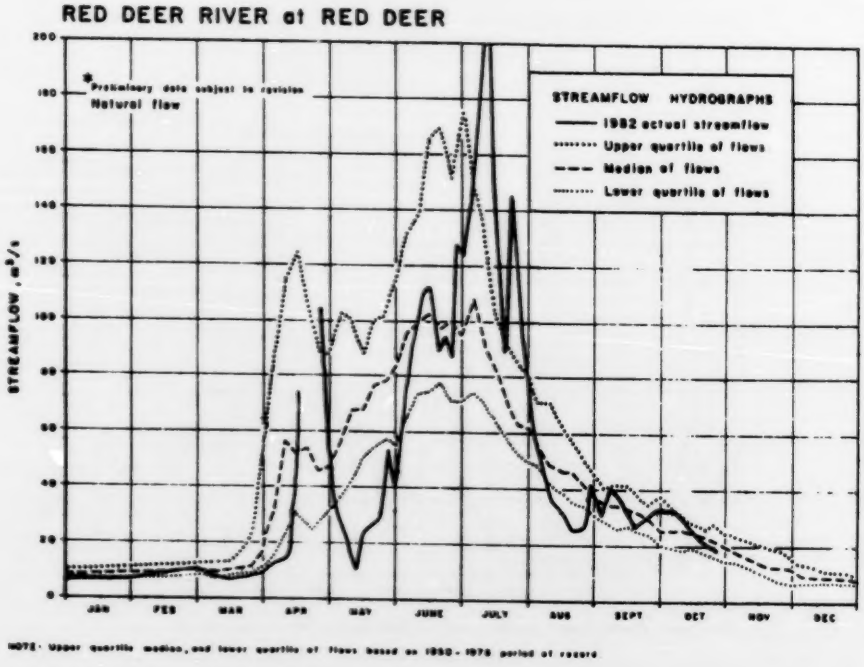
Figures 2 through 9 summarize the winter and summer precipitation as it occurred during the past year.

Water Supply Volume Review

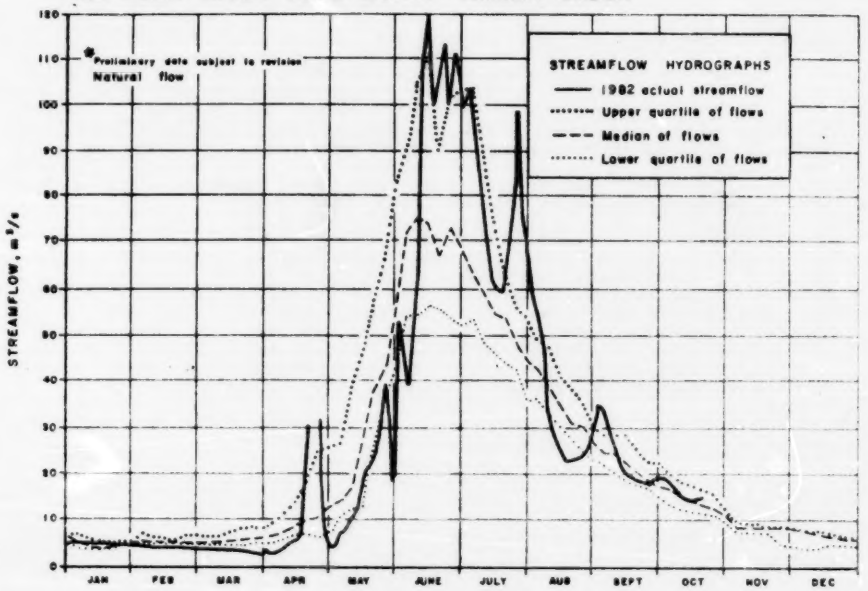
Based on March 1 snowpack conditions, the runoff from the Red Deer Basin was expected to be below normal during the summer of 1982. The water supply forecast increased slightly during March but the much below April precipitation then reduced the expected amount to 75 percent of normal.

July storms produced a major upswing in the water supply situation. The water supply was increased considerably downstream of Red Deer and to a minor extent upstream of the city. Runoff for the period April 1 to October 31, 1982 was 86 percent of normal for the Red Deer River at Red Deer.

Table 1 is a summary of the actual water supply conditions for 1982.

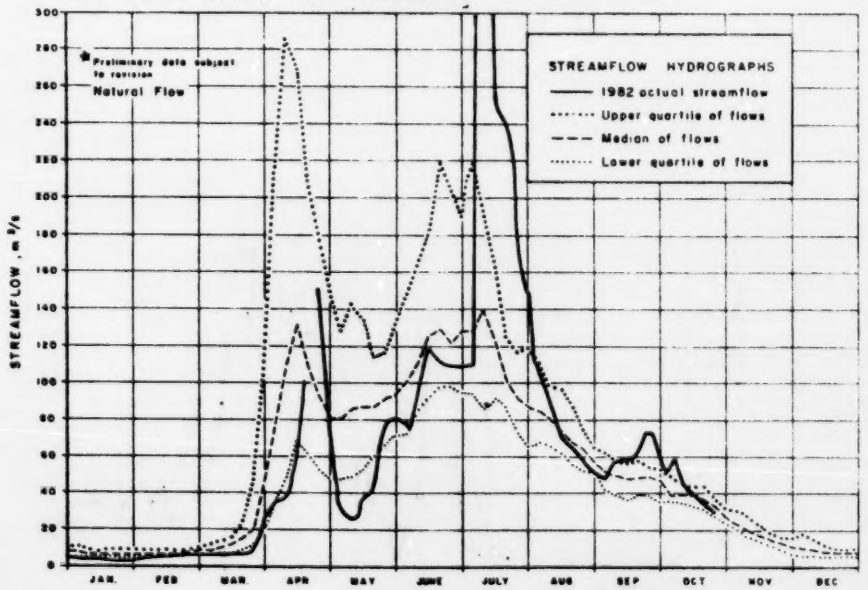


RED DEER RIVER below BURNT TIMBER CREEK



NOTE: Upper quartile, median, and lower quartile of flows based on 1950 - 1978 period of record

RED DEER RIVER near BINDLOSS



NOTE Upper quartile, median, and lower quartile of flows based on 1950 - 1978 period of record

NORTH SASKATCHEWAN RIVER BASIN

Weather, Snowpack and Streamflow Conditions Review

As of March 1, 1982 the snowpack for the North Saskatchewan basin was above normal for most of the plains area and normal for the headwaters. January was the heaviest snowfall month in the basin. Natural flow for the North Saskatchewan for the October 1, 1982 to February 28, 1982 period was below normal. With the heavy plains snowpack, streamflow was expected to be high during the spring melt.

March was a month of above normal snowfall for most of the North Saskatchewan basin especially for the area west of Edmonton. Conditions for the mountain snowpack remain normal.

Dry cool weather prevailed throughout the province during April. Spring runoff did not begin until the third week of April. Tributaries to the North Saskatchewan River, such as the Battle River, Sturgeon River, Whitemud Creek and other streams around Edmonton, were in flood during this time and many low lying areas were affected.

April was followed by another relatively dry month. The North Saskatchewan receded quickly from the spring runoff and remained relatively low until summer rains came in July. Mountain runoff was slow and steady keeping flows on the North Saskatchewan high throughout June.

July was a very wet month. During the first five days a major storm occurred in the basin causing high flows on the North Saskatchewan. A second storm, although centred further north, kept flows high for the remainder of the month.

Flows quickly dropped off and remained near normal for the remainer of the summer and on into the fall. Summer and winter precipitation for the North Saskatchewan Basin are presented in Figures 2 through 9.

Water Supply Volume Review

Based on March 1, 1982 snow pack conditions, the North Saskatchewan was expected to produce slightly above normal runoff. Runoff was expected to be above normal for the plains area but slightly below normal for the mountainous area.

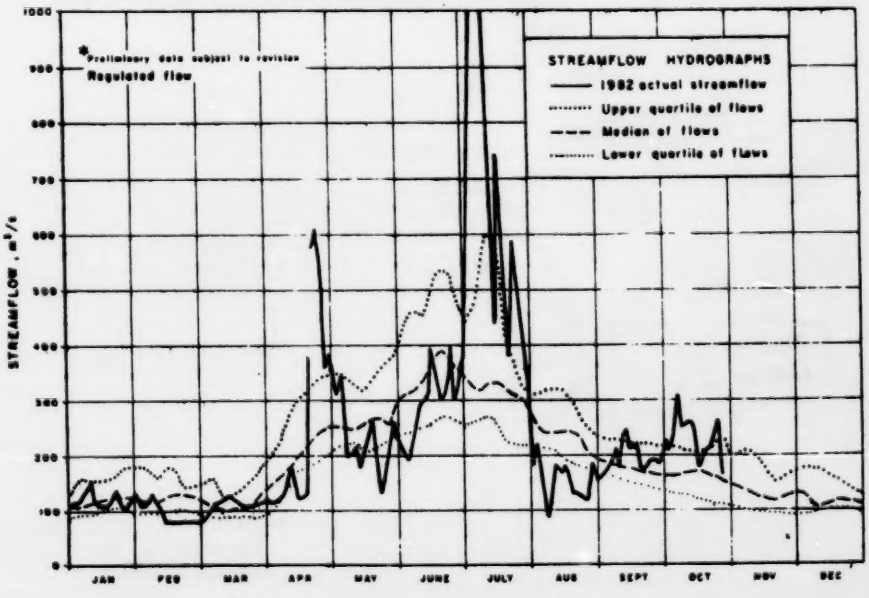
Heavy precipitation during the month of April boosted the water supply forecast but this was later offset with below normal precipitation in May and June. July's natural flow was much above normal.

Natural flow for the April 1 to October 31 period was 106 percent of normal. See Table 1 for the 1982 water supply summary.

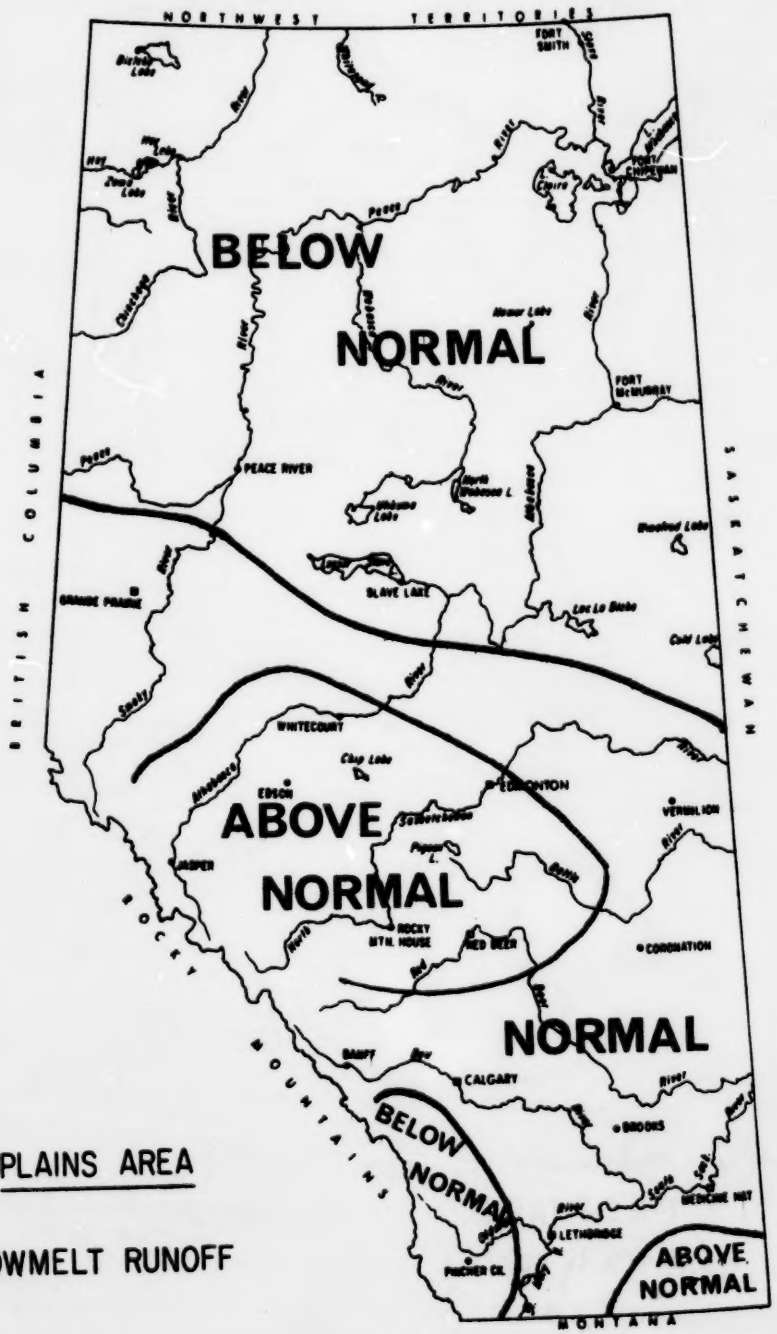
Water Storage Review

Normal to slightly above normal flows in the North Saskatchewan allowed for normal filling for the Brazeau and Bighorn reservoirs. Both these reservoirs continued at their normal operating levels throughout the season. Table 2 gives a summary of water supply conditions as of October 1, 1982.

NORTH SASKATCHEWAN RIVER at EDMONTON



NOTE: Upper quartile, median, and lower quartile of flows based on 1958 - 1979 period of record.

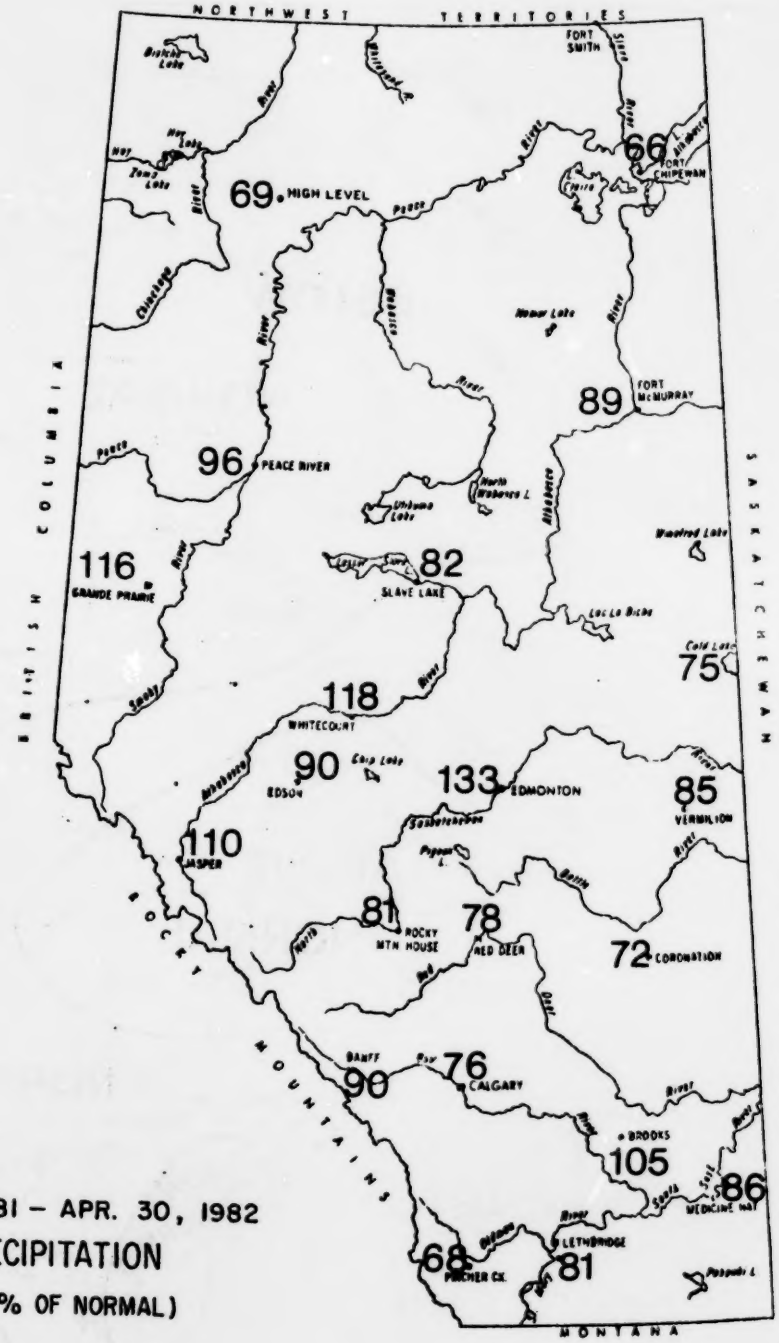


PLAINS AREA

SNOWMELT RUNOFF

Note: This figure does not reflect mountain runoff conditions.

FIGURE 1



NOV. 1, 1981 – APR. 30, 1982

PRECIPITATION

(AS A % OF NORMAL)

FIGURE 2

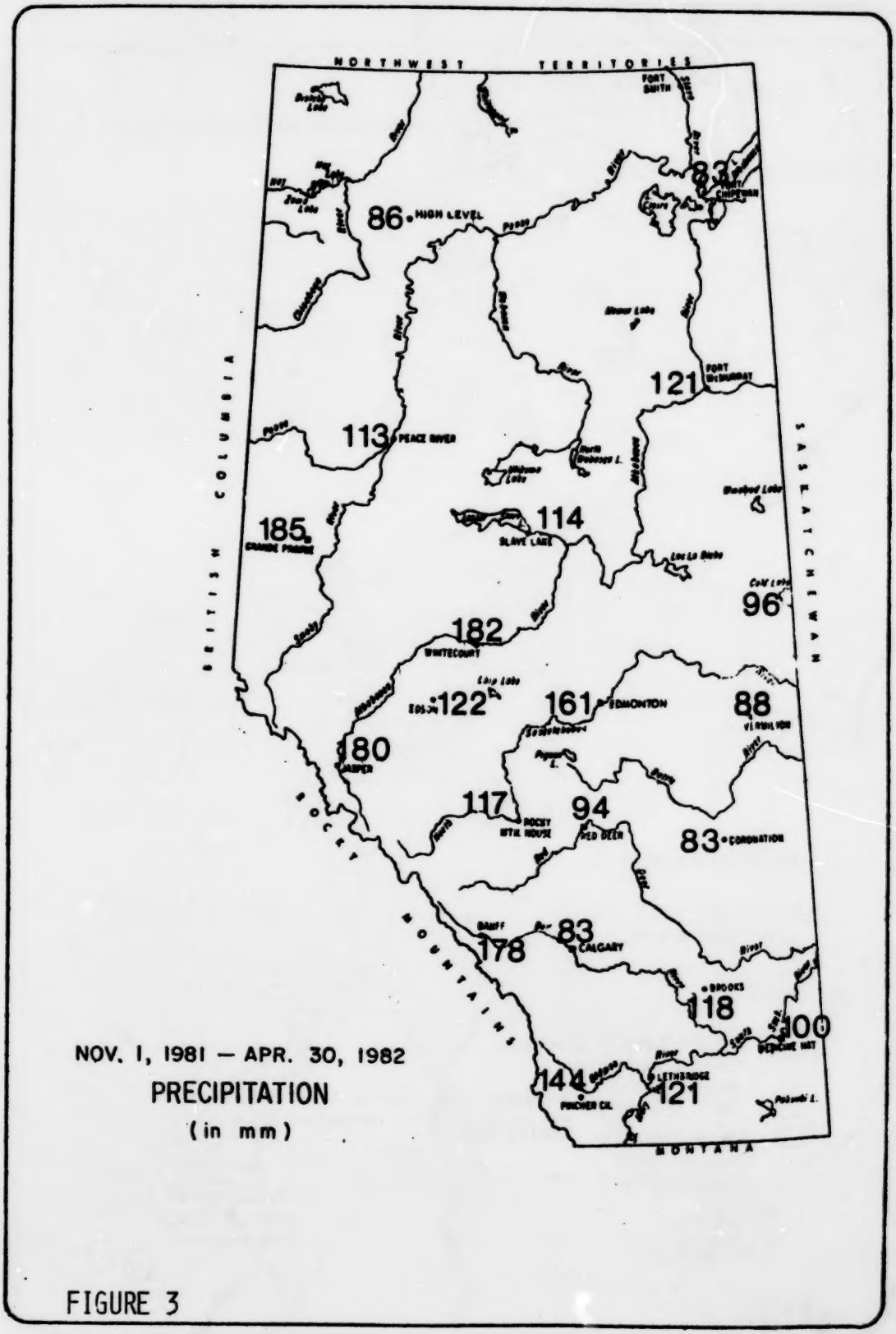

NORTHWEST TERRITORIES
BRITISH COLUMBIA
SASKATCHEWAN
MONTANA
ROCKY MOUNTAINS
86 HIGH LEVEL
83
121
113 PEACE RIVER
185
114
96
182
122
161 EDMONTON
88
180
117
94
83 CORONATION
178
83 CALGARY
118
100
144
121
NOV. 1, 1981 — APR. 30, 1982
PRECIPITATION
(in mm)

FIGURE 3

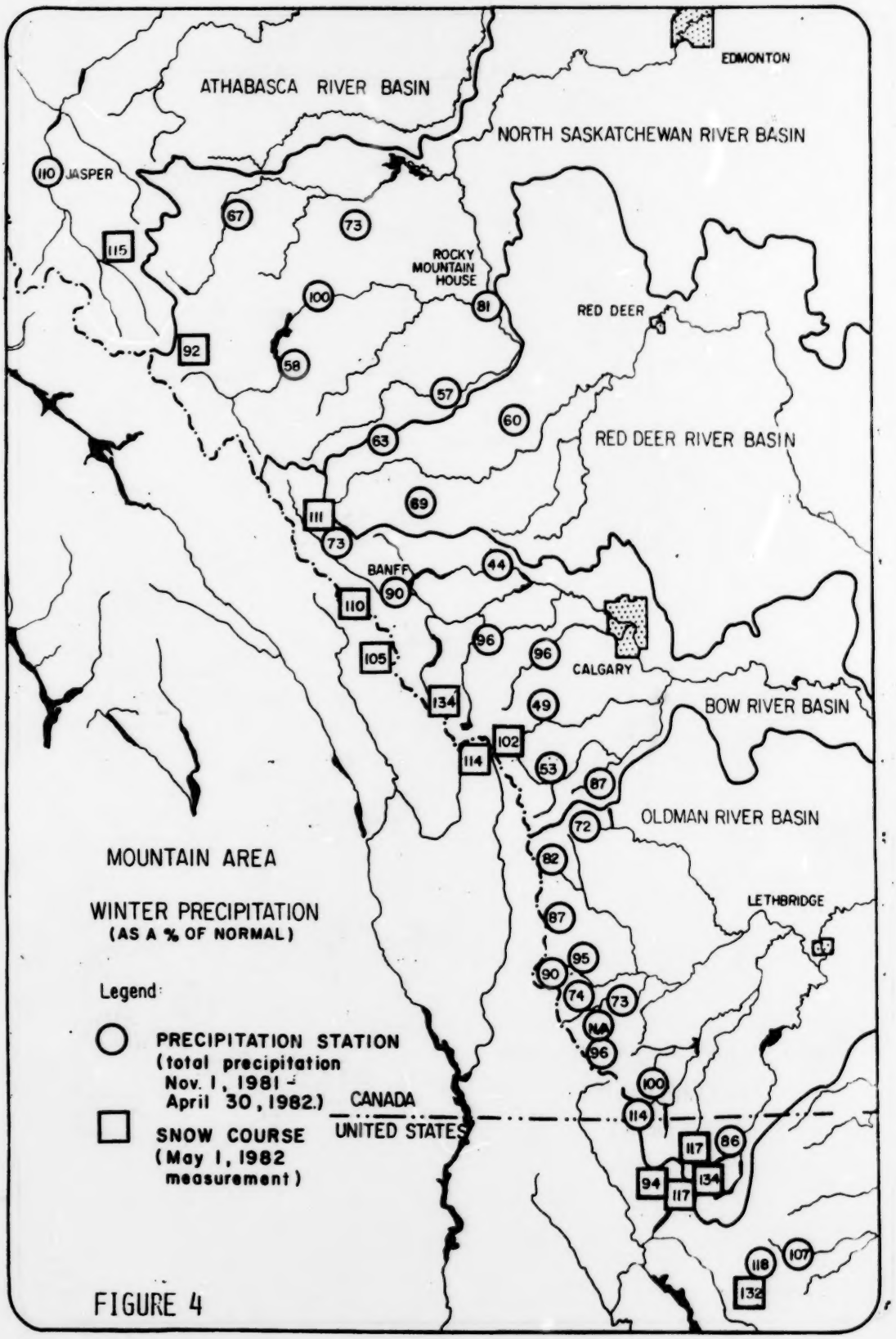

ATHABASCA RIVER BASIN
NORTH SASKATCHEWAN RIVER BASIN
EDMONTON
JASPER
ROCKY MOUNTAIN HOUSE
RED DEER
RED DEER RIVER BASIN
BANFF
CALGARY
BOW RIVER BASIN
OLDMAN RIVER BASIN
LETHBRIDGE
MOUNTAIN AREA
WINTER PRECIPITATION
(AS A % OF NORMAL)
Legend
PRECIPITATION STATION
(total precipitation
Nov. 1, 1981 -
April 30, 1982.)
SNOW COURSE
(May 1, 1982
measurement)
CANADA
UNITED STATES
110
67
73
115
100
81
92
58
57
60
63
69
111
73
44
90
110
105
96
96
134
49
102
114
53
87
72
82
87
95
90
74
73
NA
96
100
114
117
86
94
117
134
118
107
132

FIGURE 4

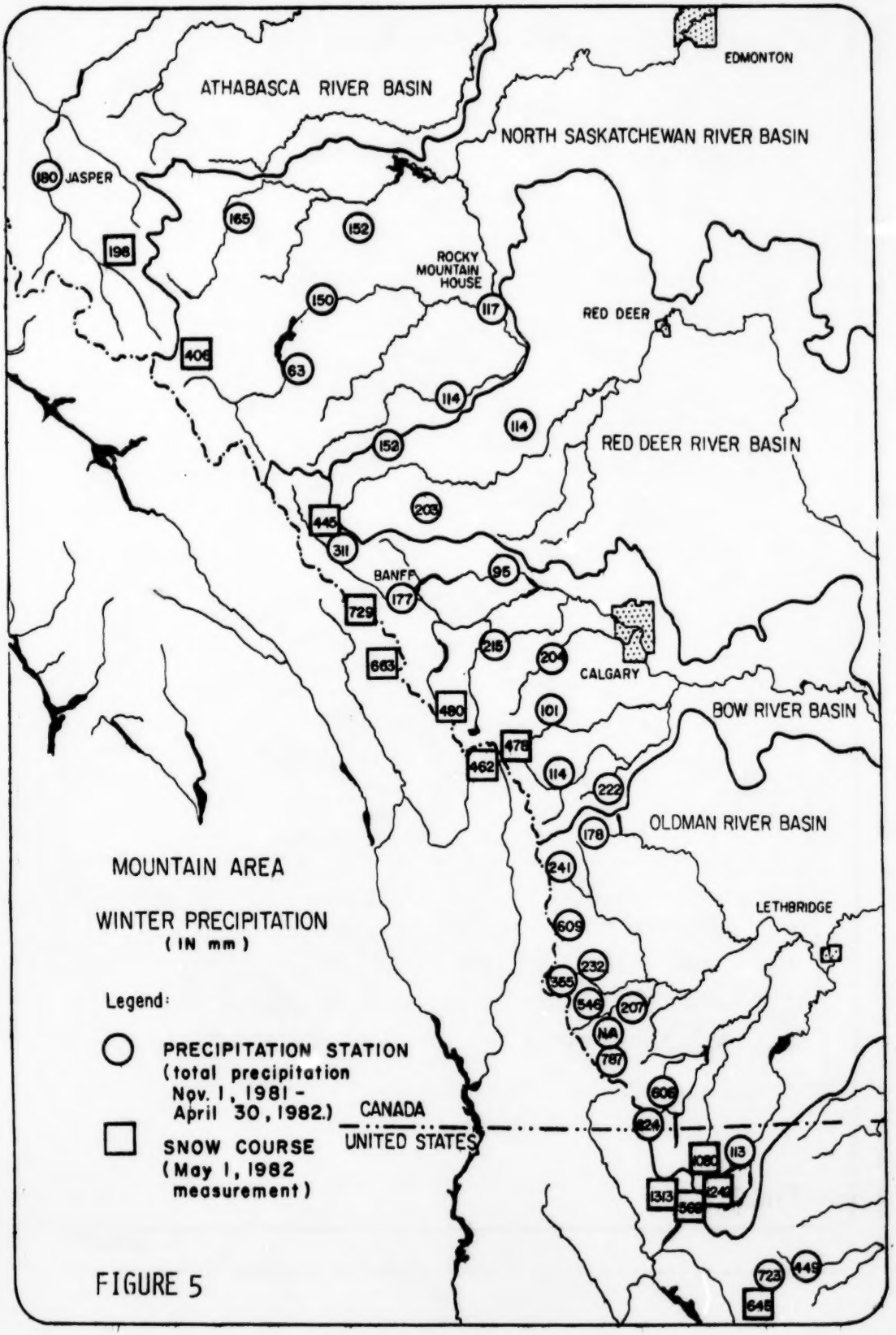
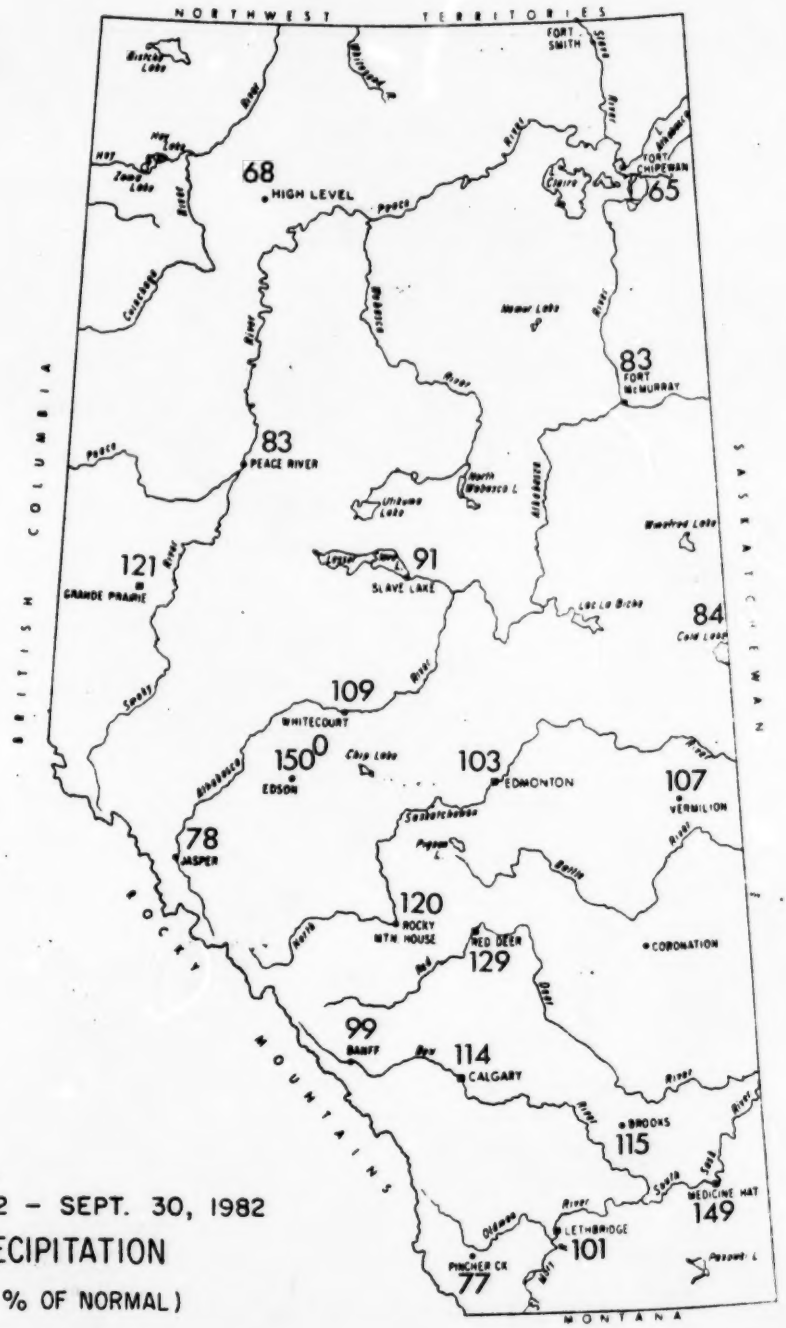

EDMONTON
ATHABASCA RIVER BASIN
NORTH SASKATCHEWAN RIVER BASIN
180 JASPER
165
152
198
ROCKY MOUNTAIN HOUSE
150
117
RED DEER
406
63
114
114
152
RED DEER RIVER BASIN
209
445
311
BANFF
95
177
729
215
204
CALGARY
663
480
101
BOW RIVER BASIN
475
462
114
222
OLDMAN RIVER BASIN
178
241
LETHBRIDGE
609
232
355
546
207
NA
787
606
224
CANADA
UNITED STATES
113
1313
244
723
449
645
MOUNTAIN AREA
WINTER PRECIPITATION
(IN mm)
Legend:
PRECIPITATION STATION
(total precipitation Nov. 1, 1981 - April 30, 1982.)
SNOW COURSE
(May 1, 1982 measurement)

FIGURE 5

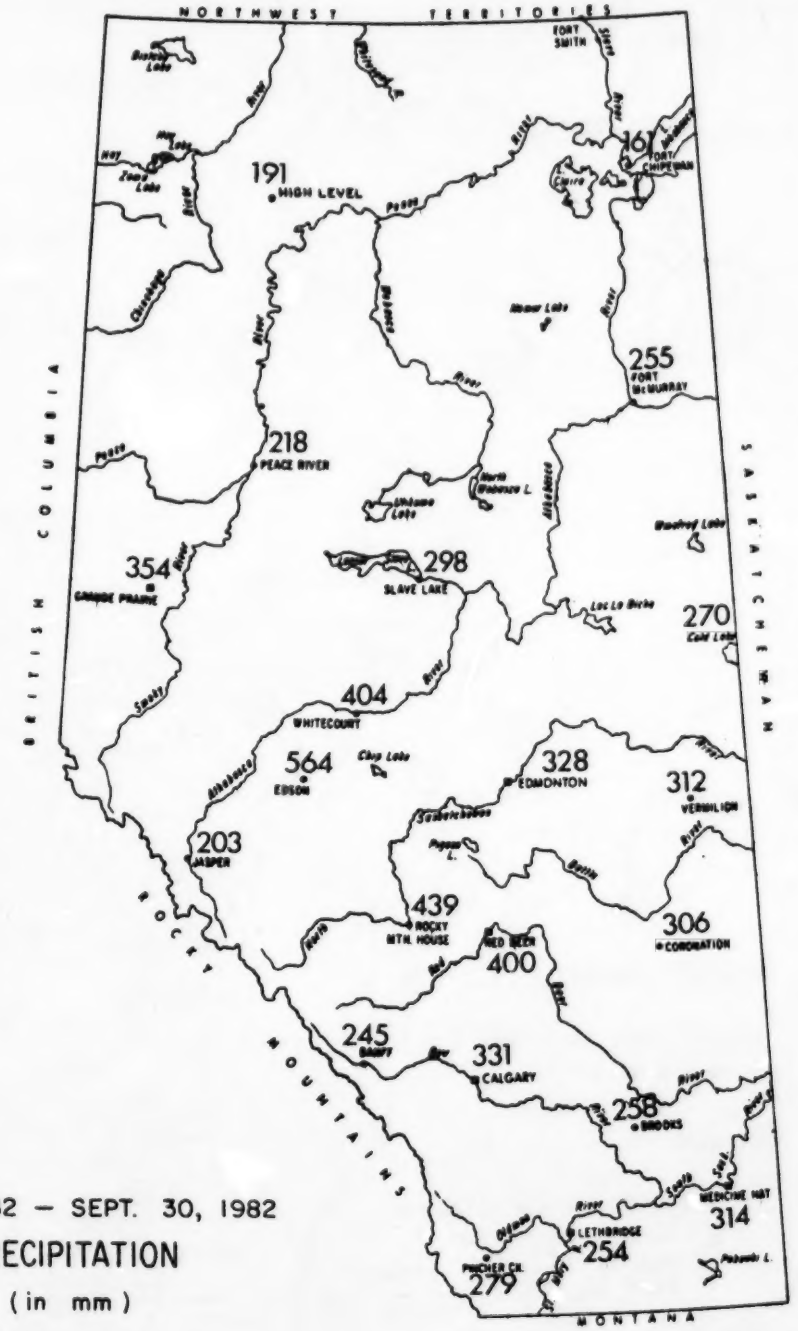


MAY 1, 1982 – SEPT. 30, 1982

PRECIPITATION

(AS A % OF NORMAL)

FIGURE 6



MAY 1, 1982 – SEPT. 30, 1982

PRECIPITATION

(in mm)

FIGURE 7

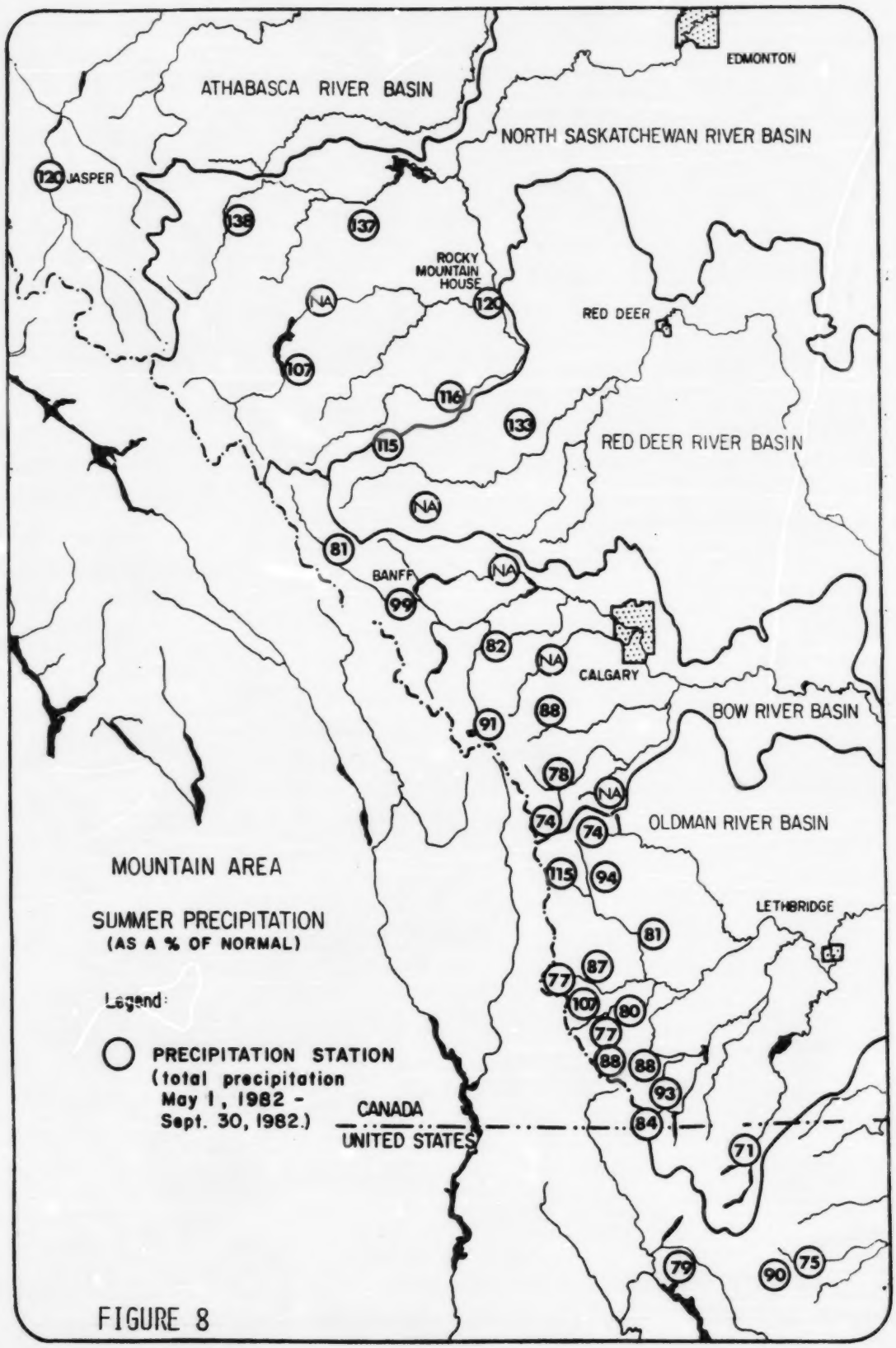

ATHABASCA RIVER BASIN
NORTH SASKATCHEWAN RIVER BASIN
EDMONTON
JASPER
120
136
137
ROCKY MOUNTAIN HOUSE
NA
120
RED DEER
107
116
133
115
RED DEER RIVER BASIN
NA
81
BANFF
NA
99
82
NA
CALGARY
88
91
BOW RIVER BASIN
78
NA
74
74
OLDMAN RIVER BASIN
115
94
LETHBRIDGE
81
87
77
101
80
77
88
88
93
84
71
79
90
75
MOUNTAIN AREA
SUMMER PRECIPITATION
(AS A % OF NORMAL)
Legend:
PRECIPITATION STATION
(total precipitation
May 1, 1982 -
Sept. 30, 1982.)
CANADA
UNITED STATES

FIGURE 8

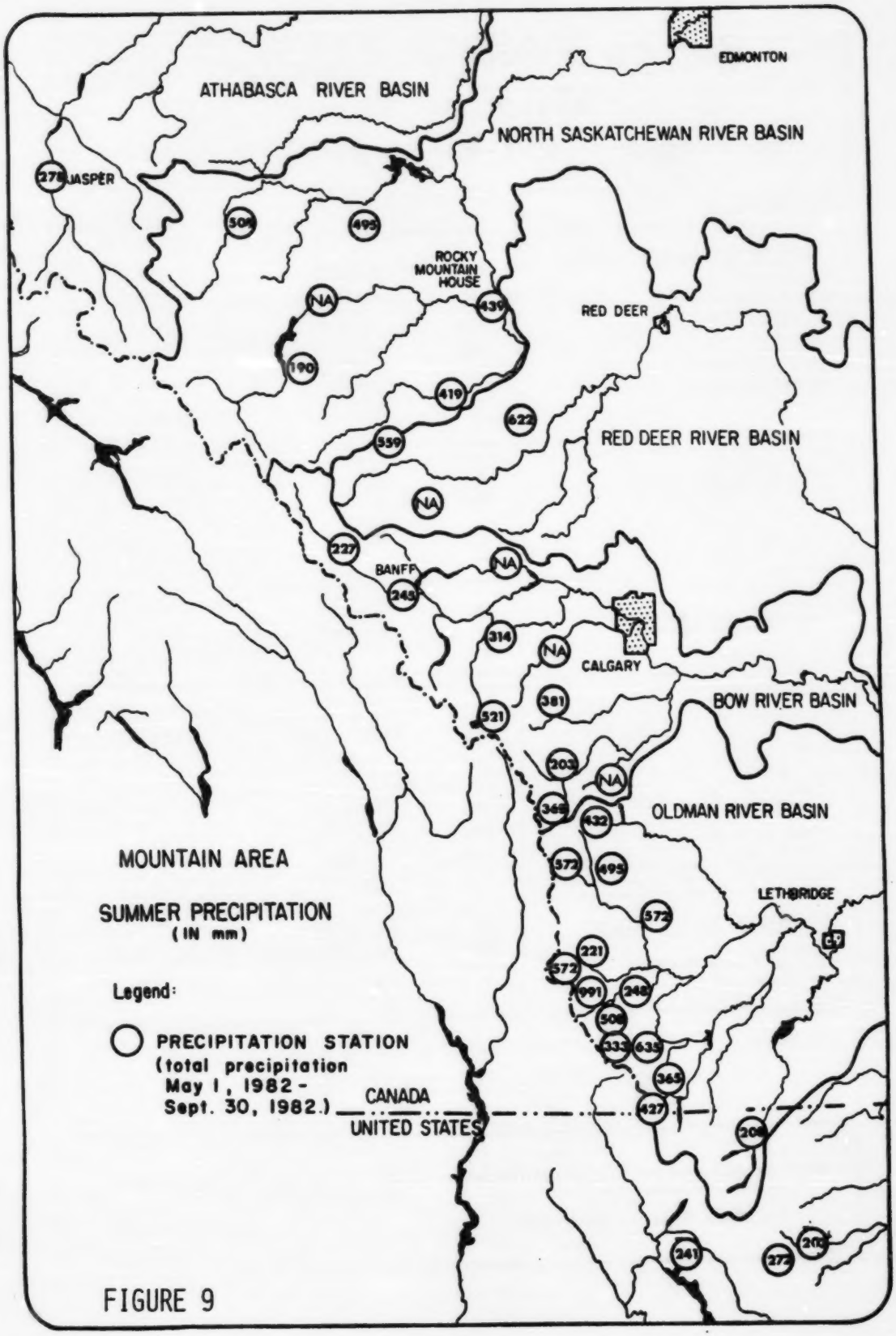

EDMONTON
ATHABASCA RIVER BASIN
NORTH SASKATCHEWAN RIVER BASIN
JASPER
278
309
495
ROCKY MOUNTAIN HOUSE
NA
439
RED DEER
190
419
622
559
RED DEER RIVER BASIN
NA
227
BANFF
NA
245
314
NA
CALGARY
381
BOW RIVER BASIN
321
203
NA
348
432
OLDMAN RIVER BASIN
372
495
LETHBRIDGE
572
221
572
991
348
508
333
635
365
427
206
241
272
MOUNTAIN AREA
SUMMER PRECIPITATION
(IN mm)
Legend:
PRECIPITATION STATION
(total precipitation
May 1, 1982 -
Sept. 30, 1982.)
CANADA
UNITED STATES

FIGURE 9

TABLE I

WATER SUPPLY SUMMARY 1982

	Total Runoff ($10^6 m^3$)*	(% of Normal)
BOW RIVER BASIN	**May 1 to Sept. 30 Runoff**	
Bow River at Banff	1000	99
Bow River at Calgary	2100	91
Elbow River	129	64
Highwood River	320	55
NORTH SASK. RIVER BASIN	**Apr. 1 to Oct. 31 Runoff**	
North Saskatchewan River at Edmonton	6720	106
OLDMAN RIVER BASIN	**Apr. 1 to Sept. 30 Runoff**	
St. Mary River at International Boundary	658	97
Belly River near Mountain View	219	90
Waterton River at Waterton Park	478	98
Oldman River near Fort McLeod	855	73
Oldman River near Lethbridge	2270	76
RED DEER RIVER BASIN	**Apr. 1 to Sept. 30 Runoff**	
Red Deer River at Red Deer	1180	86

NOTE: Forecasts shown are total natural flow volumes computed from recorded flow data and current reservoir storage.

1 x $10^6 m^3$ = 811 ac-ft = 410 cfs days

TABLE 2

MAJOR WATER STORAGE RESERVOIRS IN ALBERTA

STATUS AS OF OCT. 1, 1982

	LIVE STORAGE ($10^6 m^3$)		PERCENT OF MAXIMUM LIVE STORAGE	REMARKS
BOW RIVER BASIN	Oct. 1 1982	Oct. 1 1981	October 1 1982	
Lake Minnewanka	207	217	96	Normal
Lower Kananaskis Lake	55	58	75	Normal
Upper Kananaskis Lake	116	93	90	Normal
Spray Lake	251	95	96	Normal
TOTAL	629	463		
Lake McGregor	287	259	89	Normal
Travers Reservoir	83	81	79	Normal
TOTAL	360	340		
Lake Newell	140	125	79	Normal
NORTH SASKATCHEWAN RIVER BASIN	Oct. 1 1982	Oct. 1 1981	October 1 1982	
Lake Abraham	1321	1322	94	Normal
Brazeau Reservoir	473	467	98	Normal
TOTAL	1794	1789		
OLDMAN RIVER BASIN	Oct. 1 1982	Oct. 1 1981	October 1 1982	
St. Mary Reservoir	340	255	92	Above Normal
Waterton Reservoir	58	45	51	Normal
Ridge Reservoir	14	103	11	Below Normal*
Chin Reservoir	161	112	94	Normal
TOTAL	583	515		

NOTE: 1 x $10^6 m^3$ = 811 ac-ft = 410 cfs days

* drawn down for repairs

APPENDIX A

SNOW SURVEY
AND
STORAGE GAUGE DATA

SNOW SURVEY ACTIVITIES

1981 - 1982

In 1981-82 Alberta Environment operated thirty five snow courses in the mountainous areas of the Province and sixty five in the plains. The following tables contain a summary of all the data collected at these sites in the winter of 1981-82 as well as information on the location of each course.

The main purpose of the courses is to provided data to the River Forecast Centre to enable them to produce the Water Supply Outlook and make flood forecasts when necessary. For this reason the snow data are included in the Water Supply Outlook which are issued on March 1st, April 1st, May 1st and June 1st. In addition the data will be published along with snow data from other Provinces, by the Atmospheric Environment Service, in their annual publication, Snow Cover Data for Canada.

An historical summary containing all data collected in previous years at the snow courses included in this report is available upon request. This summary also includes data from discontinued snow courses. It should be noted that the snow courses are measured at approximately the same date every year. If the measurement cannot be carried out either six days before or six days after the first day of the month, they are not included in the summary.

In addition to the snow courses, data were collected from twelve snow pillows in 1981-82. Five of these pillows were equipped to give data on a real time basis. The primary purpose of snow pillows is to provide an indication of the snow melt rate at higher elevations. On page A11 is a list of all snow pillows operated in 1981-82 as well as graphs from the pillows which operated satisfactorily. The graphs indicate the accumulation and depletion of the water equivalent of the snow pack over the winter. Also shown for comparison purposes are the results of snow surveys carried out by conventional methods at adjacent snow courses.

In 1981-82 two snow courses were established and none were discontinued. Following are details of these now courses.

	Approximate Location Latitude	Longtitude	Elevation Metres	Basin
Mayerthorpe Snow Pillow Course	52° 52'	115° 19'	760	Athabasca
Twin Lakes Snow Pillow Course	54° 03'	114° 48'	655	Athabasca

The data from the first year of operation is not included in this report, but it is included in the historical summary referred to above.

For further information on snow data, please contact.

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Technical Services Division
10th Floor, Oxbridge Place
9820 - 106 Street
Edmonton, Alberta
T5K 2J6

Telephone Number: 427 - 6279

ALBERTA SNOW COURSE DATA
MOUNTAIN AREA

Station Name	Elevation (metres)	Date of Survey (Mo-Day)	Snow Depth (cm) 1982	Water Equivalent (mm) 1982	1981	Prior to 1982 Max.	Min.	Ave.	Total Years of Record
ATHABASCA RIVER BASIN									
Marmot-Jasper	1830	N/A	N/A	N/A	170	178	170	174	3
		03-01	83	185	208	208	193	201	3
		03-30	90	213	244	422	152	263	13
		04-29	86	239	193	401	0	237	13
Sunwapta Falls	1400	01-28	57	84	132	183	89	142	12
		03-02	81	175	173	277	79	176	11
		03-29	80	193	196	333	89	209	14
		04-29	63	199	163	340	0	172	13
BOW RIVER BASIN									
Bow River	1555	01-29	62	130	201	262	79	175	16
		02-23	88	206	234	386	112	210	16
		03-31	92	234	244	437	97	212	46
Bow Summit II	2030	01-28	95	178	282	292	282	287	3
		02-26	120	274	368	368	356	364	4
		04-02	129	353	381	434	361	392	4
		04-29	122	396	439	439	305	361	4
		05-28	73	262	160	160	160	160	2
Chateau Lawn	1740	01-28	74	152	274	284	122	226	14
		02-23	98	221	290	401	155	271	14
		03-31	111	300	328	480	135	275	41
Cut Head Lake	2210	04-01	154	389	422	490	401	438	4
		04-28	130	465	422	485	350	419	4
		05-28	115	391	404	404	56	248	4
Highwood Summit (Bush)	2210	01-27	100	183	262	439	132	293	9
		02-23	127	241	318	460	241	359	12
		03-30	136	305	358	681	259	408	13
		04-27	134	478	376	726	221	469	19
		05-31	111	373	455	455	455	455	2
Katherine Lake	2380	04-28	157	541	N/A	500	500	500	2
		05-28	140	554	363	386	363	375	3
Little Elbow Summit*	2160	01-27	81	145	211	249	122	194	4
		02-23	107	221	257	257	218	244	4
		03-30	121	287E	279	348	279	309	4
		04-27	118	384	259	353	259	310	4
		05-31	96	292	373	373	373	373	2
Larch Valley	2230	N/A	N/A	N/A	475	475	424	457	4
		04-29	176	546	546	546	426	481	4
		05-28	126	483	384	384	363	374	3
Mirror Lake	2010	01-26	67	142	249	348	109	224	16
		02-23	100	213	257	483	142	265	16
		03-31	108	295	318	561	160	301	43
Mist Creek	1755	03-30	94	249	152	302	140	198	6
		04-27	71	234	0	523	0	198	17
Mount Skoki*	2055	04-01	136	366	366	396	318	360	4
		04-28	128	414	391	391	333	360	4
		05-28	91	358	269	274	48	197	4
Mud Lake	1890	03-30	147	424	269	386	269	314	5
		04-27	132	480	302	551	206	359	10

*Snow pillow data also available at these sites.
E - estimated

Station Name	Elevation (metres)	Date of Survey (Mo-Day)	Snow Depth (cm) 1982	Water Equivalent (mm) 1982	1981	Prior to 1982 Max.	Min.	Ave.	Total Years of Record
BOW RIVER BASIN (Cont'd)									
Pipestone, Upper	1615	01-26	84	135	201	279	89	169	16
		02-23	100	234	234	376	107	218	16
		03-31	102	284	246	434	109	210	46
Ptarmigan Hut	2180	02-24	139	325	373	564	213	348	14
		04-01	148	422	384	681	254	422	16
		04-28	138	445	447	658	196	404	16
		05-28	82	318	249	249	249	249	2
Sunshine Village*	2225	01-29	163	381	401	447	317	385	5
		02-25	187	516	472	770	277	503	13
		04-02	205	658	511	996	406	646	16
		04-29	202	729	592	1092	338	665	16
		05-26	149	627	462	462	203	357	4
Three Isle Lake	2160	03-30	205	652	559	559	559	559	2
		04-27	195	737	620	620	620	620	2
		05-31	150	673	587	587	587	587	2
NORTH SASKATCHEWAN RIVER BASIN									
Nigel Creek	1950	01-28	103	191	279	528	173	292	12
		03-02	136	355	386	655	185	374	11
		03-29	133	389	406	686	198	434	14
		04-29	124	406	478	752	208	442	13
OLDMAN RIVER BASIN									
Akamina*	1770	N/A	N/A	N/A	N/A	295	338	295	317	3
		02-24	168	472	404	404	396	400	3
		04-01	205	663	432	564	432	498	3
		04-28	173	691	373	373	320	347	3
		06-03	82	378	N/A	N/A	N/A	N/A	1
Allison Pass	1980	04-01	183	577	450	823	130	506	19
Lee Creek Watershed D	1660	02-22	50	122	99	444	81	208	9
		03-30	75	216	117	615	117	251	8
Lee Creek Watershed E	1680	02-22	78	203	165	267	91	178	5
		03-30	71	183	206	536	178	315	6
Lee Creek Watershed F	1560	02-22	58	142	99	231	99	168	7
		03-30	73	203	60	356	60	205	8
Lee Creek Watershed H	1640	02-23	44	107	81	249	81	161	7
		03-31	68	193	64	284	64	168	8
Lee Creek Watershed J	1640	02-23	58	150	107	245	81	154	8
		03-31	94	292	117	429	117	207	8
Lee Creek Watershed P	1520	02-22	43	89	84	366	84	189	9
		03-30	51	155	61	358	61	190	10
Lee Creek Watershed Q	1490	02-22	45	114	112	320	97	177	12
		03-30	73	201	117	315	91	183	11
Middle Drywood	1570	03-29	26	74	10	97	0	47	18
West Castle (Bush)	1525	04-01	167	554	338	846	244	447	16
Wilkinson Summit (Bush)	1980	04-01	78	173	152	460	132	231	19
Wilkinson Summit (Open)	1980	04-01	73	157	112	417	112	196	18

ALBERTA SNOW COURSE DATA
PLAINS AREA

Station Name	Date of Survey (Mo-Day)	Snow Depth (cm) 1982	Water Equivalent (mm) 1982	1981	Prior to 1982 Max.	Min.	Ave.	Total Years of Record
ATHABASCA RIVER BASIN								
Barrhead, North	02-26	48	81	56	145	25	67	9
	03-16	51	109	57	71	36	57	8
	03-30	48	112	22	147	0	55	8
Barrhead, West	02-26	41	74	45	99	33	61	9
	03-16	46	84	50	74	36	51	8
	03-30	44	99	0	145	0	49	8
Edson, East	03-01	70	155	79	86	58	74	8
	03-17	70	165	53	109	25	68	9
	03-30	63	168	5	130	0	53	8
Embarras Portage	03-03	50	81	76	84	41	63	8
	03-15	50	86	86	112	48	76	9
	03-31	57	99	84	84	38	54	6
Flatbush	02-25	54	89	61	99	51	73	9
	03-15	37	64	57	81	53	74	8
	03-29	56	122	0	175	0	72	7
Fort Chipewyan Airport*	02-26	35	51	81	81	28	61	8
	03-15	37	64	109	119	28	75	10
	04-02	39	71	91	119	41	83	9
Grassland	02-25	29	58	30	102	8	54	9
	03-15	42	107	31	74	10	41	8
	03-29	36	97	0	130	0	52	8
High Prairie**	03-01	53	106E	46	132	13	72	9
	03-15	56	111	51	112	38	67	8
	03-30	71	156	0	185	0	75	7
Highrock Tower	03-02	51	69	76	94	30	63	8
	03-15	49	66	84	107	33	71	8
	03-31	47	66	91	112	38	77	7
Hinton, North	03-01	68	122	56	89	41	66	8
	03-17	79	152	56	127	23	81	9
	03-30	75	157	30	137	0	69	8
Jackfish Village	02-25	41	53	81	94	43	69	6
	03-16	45	71	86	102	33	71	8
	03-31	47	81	84	193	23	91	9
Kinuso	02-25	59	104	48	107	23	75	9
	03-15	65	130	45	102	38	71	8
	03-29	77	155	22	163	0	68	7
Lodgepole #1	02-25	56	119	51	137	51	83	9
	03-15	69	157	28	130	28	77	17
	03-30	60	157	0	165	0	71	10
Meadowview	02-26	54	104	54	137	54	79	10
	03-16	61	132	55	127	41	69	17
	03-30	54	124	25	160	0	73	9
Obed	03-01	78	165	38	104	0	64	8
	03-17	79	178	28	145	0	79	9
	03-30	78	196	10	173	0	66	8
Paddle River #2*	02-26	59	117	55	86	55	74	7
	03-15	68	142	40	142	40	80	9
	03-30	55	142	13	188	13	77	9

* Snow pillow data also available for this site.
** E - Estimated value for 1982 Water Equivalent (High Prairie).

Station Name	Date of Survey (Mo-Day)	Snow Depth (cm) 1982	Water Equivalent (mm) 1982	1981	Prior to 1982 Max.	Min.	Ave.	Total Years of Record
NORTH SASKATCHEWAN RIVER BASIN, (continued)								
Morinville, North	02-25	24	46	30	130	30	60	9
	03-15	42	94	20	71	20	49	8
	03-29	40	97	0	170	0	56	7
Nordegg, South	03-02	36	61	6	90	6	44	8
	03-17	41	76	15	89	15	60	7
	03-29	48	97	0	109	0	62	8
Onoway	02-26	42	81	33	109	33	59	9
	03-16	54	112	29	74	8	43	8
	03-30	45	107	0	196	0	45	7
Pipestone Creek*	03-01	59	102	18	76	18	58	7
	03-17	63	137	0	97	0	44	7
	03-31	50	124	0	104	0	26	5
Saint Paul, East	02-26	21	36	38	99	13	53	9
	03-16	34	71	23	99	18	46	8
	03-30	29	74	0	117	0	50	8
Two Hills, East	02-26	21	38	48	124	28	62	9
	03-16	28	74	29	69	29	47	8
	03-30	30	86	0	152	0	60	7
Wainwright	03-01	19	30	33	51	28	41	7
	03-17	27	56	22	53	0	34	8
	03-31	20	53	0	150	0	33	7
Waskatenau	02-25	20	53	38	117	30	66	9
	03-15	30	86	46	84	41	56	8
	03-29	31	97	0	147	0	69	7
Wetaskiwin	03-01	38	69	0	56	0	39	9
	03-17	41	97	0	63	0	33	7
	03-31	36	99	0	58	0	17	7
PEACE RIVER BASIN								
Bezanson	03-01	63	145	74	102	41	68	8
	03-15	62	144	18	142	18	73	9
	03-31	63	140	0	193	0	60	7
Eureka River	03-02	33	56	105	127	51	82	9
	03-16	37	62	114	122	61	93	8
	03-31	26	52	77	155	0	86	6
Fairview	03-02	34	86	112	130	22	77	9
	03-16	41	105	103	117	16	86	9
	03-31	43	102	61	112	0	67	6
Girouxville	03-01	41	107	53	130	28	66	9
	03-15	45	126	0	127	0	57	8
	03-30	40	116	0	124	0	49	7
Hythe	03-02	70	133	37	142	30	64	9
	03-15	64	151	0	104	0	52	8
	03-31	61	130	0	173	0	44	7
Little Smoky River	03-01	70	141	105	117	56	87	7
	03-15	63	146	0	145	0	86	9
	03-30	67	164	0	152	0	78	6
North Star Manning	03-01	40	64	14	86	0	38	8
	03-15	38	75	0	99	0	37	8
	03-30	40	95	0	107	0	38	6

Station Name	Date of Survey (Mo-Day)	Snow Depth (cm) 1982	Water Equivalent (mm) 1982	1981	Prior to 1982 Max.	Min.	Ave.	Total Years of Record
ATHABASCA RIVER BASIN, (continued)								
Perryvale, East	02-25	30	58	56	137	36	70	9
	03-15	44	94	48	91	48	65	8
	03-29	39	86	0	150	0	69	7
Saulteaux River at Highway #2	02-25	52	84	57	112	43	76	9
	03-15	58	109	71	86	48	71	8
	03-29	62	124	23	198	23	77	7
Westlock #2	02-25	42	76	13	130	13	58	11
	03-15	54	112	0	99	0	55	18
	03-29	49	104	0	211	0	49	8
Whitecourt	02-26	53	99	56	157	56	89	9
	03-15	58	127	49	109	49	83	8
	03-29	47	109	0	157	0	74	7
CHURCHILL RIVER BASIN								
Bonnyville, North	02-26	44	76	36	119	36	61	8
	03-16	55	102	25	84	25	53	8
	03-30	48	89	0	155	0	65	8
NORTH SASKATCHEWAN RIVER BASIN								
Bellis	02-25	38	64	46	122	46	76	9
	03-15	51	112	62	102	56	78	8
	03-29	47	109	29	152	29	87	6
Brazeau	02-25	50	94	58	89	58	71	6
	03-15	60	127	41	102	41	67	6
	03-29	52	127	8	117	0	44	6
Brown Creek	03-02	46	71	51	132	36	63	6
	03-17	50	79	31	137	31	62	5
	03-29	44	86	18	147	18	66	6
Bruce*	02-26	38	69	48	74	43	55	7
	03-17	49	97	43	94	43	67	8
	03-31	40	94	10	91	10	68	7
Clandonald	02-26	33	53	46	122	13	57	9
	03-16	43	81	41	74	20	51	8
	03-30	33	81	0	168	0	60	8
Coronation, Northeast	03-02	21	46	13	99	13	41	9
	03-18	19	43	0	102	0	31	7
	04-01	9	33	0	165	0	35	8
Crimson Lake	02-26	33	86	8	99	8	61	9
	03-17	50	104	0	114	0	67	7
	03-31	42	102	0	122	0	65	8
Elk Island Park	02-26	42	84	46	152	46	77	9
	03-16	57	112	27	97	27	70	8
	03-30	48	114	0	180	0	85	6
Gadsby	03-02	23	46	0	99	0	46	9
	03-18	22	61	0	53	0	27	7
	04-01	29	58	0	135	0	29	7
Leduc	03-01	53	102	68	130	56	79	9
	03-17	60	130	38	97	38	68	8
	03-31	49	135	0	168	0	63	8
Lougheed, South	03-01	43	66	30	74	30	51	8
	03-17	39	79	0	79	0	44	8
	03-31	24	71	0	119	0	58	7
Mannville, South	03-01	32	56	30	104	30	57	8
	03-17	40	81	35	69	0	42	8
	03-31	33	71	0	109	0	41	7

Station Name	Date of Survey (Mo-Day)	Snow Depth (cm) 1982	Water Equivalent (mm) 1982	1981	Prior to 1982 Max.	Min.	Ave.	Total Years of Record
PEACE RIVER BASIN, (continued)								
Rycroft, South	03-02	57	116	38	127	0	53	9
	03-16	58	126	0	97	0	39	8
	03-31	62	146	0	155	0	49	6
Sexsmith, North	03-02	61	141	84	190	36	94	9
	03-15	62	160	76	132	36	90	8
	03-31	59	130	48	218	48	108	6
Spring Creek #1*	03-01	78	178	104	180	61	118	15
	03-17	74	182	69	213	58	123	15
	03-31	76	183	27	216	10	110	15
Spring Creek #2*	03-01	70	166	100	165	51	108	15
	03-17	66	147	75	198	53	109	15
	03-31	64	157	29	208	10	95	15
Spring Creek #3	03-01	77	169	94	180	58	112	15
	03-15	71	179	89	206	63	120	15
	03-31	78	179	0	216	0	108	15
Spring Creek #4*	03-01	76	189	109	170	61	114	15
	03-15	73	191	94	185	69	114	14
	03-31	77	193	74	224	13	112	13
Sweet Grass*	03-01	47	69	64	76	36	50	6
	03-12	45	64	58	58	33	49	5
	04-01	43	64	51	66	28	52	6
RED DEER RIVER BASIN								
Bentley	03-01	31	66	7	79	7	41	9
	03-17	27	66	0	79	0	41	6
	03-31	24	69	0	150	0	53	8
Hoadley	03-01	35	74	6	74	6	43	8
	03-17	40	99	0	102	0	50	8
	03-31	33	99	0	163	0	54	8
Innisfail #1, East	02-26	27	56	23	99	15	53	8
	03-16	26	69	0	112	0	54	8
	03-01	10	25	0	86	0	40	7
Innisfail #2, East	02-26	17	36	0	53	0	25	7
	03-16	20	43	0	89	0	29	6
	03-31	7	23	0	122	0	38	6
Innisfail #3, West	02-26	28	56	52	97	28	62	9
	03-16	33	71	0	124	0	66	6
	03-31	21	56	0	112	0	63	8
James River	02-26	30	58	31	107	31	62	8
	03-16	40	69	41	122	41	77	7
	03-01	38	76	43	122	43	83	8
Sundre, East	02-26	15	28	6	84	6	49	8
	03-16	20	36	0	107	0	48	7
	03-01	13	38	0	119	0	54	8

Station Name	Elevation (metres)	Date of Survey (Mo-Day)	Snow Depth (cm) 1982	Water Equivalent (mm) 1982	1981	Prior to 1982 Max.	Min.	Ave.	Total Years of Record
RED DEER RIVER BASIN									
Gable Mountain	2150	N/A	N/A	N/A	216	216	216	216	2
		04-28	73	208	229	229	229	229	2
		05-28	55	97	130	130	130	130	2
McConnell Creek	2130	02-24	65	124	185	185	185	185	2
		04-01	78	180	216	216	216	216	2
		04-28	61	175	198	198	198	198	2
		05-28	30	51	109	109	109	109	2
ST. MARY RIVER BASIN **									
Iceberg Lake Trail	1705	04-28	205	841	439	1336	0	687	60
Peigan Pass	1675	04-27	277	1242	584	1671	145	925	60
Mt. Allen	1735	04-27	318	1367	795	1852	340	1128	60
Ptarmigan Lake	1770	04-28	259	1080	602	1618	145	922	46
Josephine Lower	1490	04-27	129	493	152	833	112	445	28

** Data collected in co-operation with U.S. Soil Conservation Service.

SACRAMENTO STORAGE GAUGE DATA
WINTER PRECIPITATION TOTAL

ACCUMULATED PRECIPITATION SINCE OCTOBER 1981

Gauge No.	Station Name	Date of Reading 1982 (Mo-Day)	81/82 (mm)	80/81 (mm)	Average[1] (mm)
CROWSNEST FOREST RESERVE					
A01	Castle Ranger Station	03-02	150	241	248
		03-29	241	279	260
A05	West Castle	02-24	559	414	505
		04-01	724	698	610
A09	Carpenter Creek	03-02	203	292	210
		03-24	267	330	255
A11	Goat Creek	02-24	368	495	N/A
		04-01	457	521	N/A
E10	Crowsnest Creek	03-02	267	292	205
		03-29	317	318	260
C10	Oyster Creek	N/A	N/A	241	130
		04-01	241	254	165
C13	Livingstone Gap	03-02	76	394	95
		03-29	102	165	N/A
C16	Racehorse Creek	02-24	508	470	N/A
		04-01	546	521	N/A
D01	Willow Creek Ranger Station	03-01	25	165	131
		03-29	89	165	135
E01	West Porcupine	03-02	51	N/A	100
		03-29	89	N/A	N/A
BOW RIVER FOREST RESERVE					
G01	Highwood Ranger Station	03-01	13	76	100
		03-29	83	76	145
G02	Mist Creek	03-26	196	305	230
H01	Sheep Ranger Station	03-29	76	76	125
K01	Canmore Ranger Station	03-01	25	89	90
		03-24	102	102	110
L01	Ghost Ranger Station	03-01	64	102	65
		04-01	102	102	95
M01	Red Deer Ranger Station	03-01	50	63	84
		03-29	89	89	90
M03	James River Ranger Station	03-29	102	89	135
M04	Panther River	03-01	76	127	N/A
		04-01	N/A	152	170
M05	Scalp Creek	03-01	38	102	N/A
		04-01	N/A	127	135

All storage gauge data collected with the co-operation of the Alberta Forestry Service.

[1] Average estimated by Water Survey of Canada, Calgary, based on the period 1956-70.

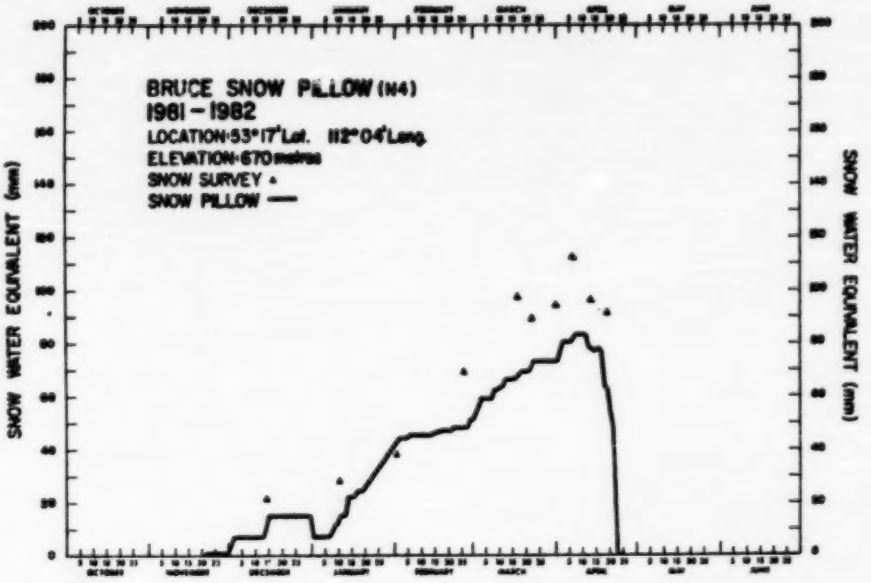
LIST OF SNOW PILLOWS

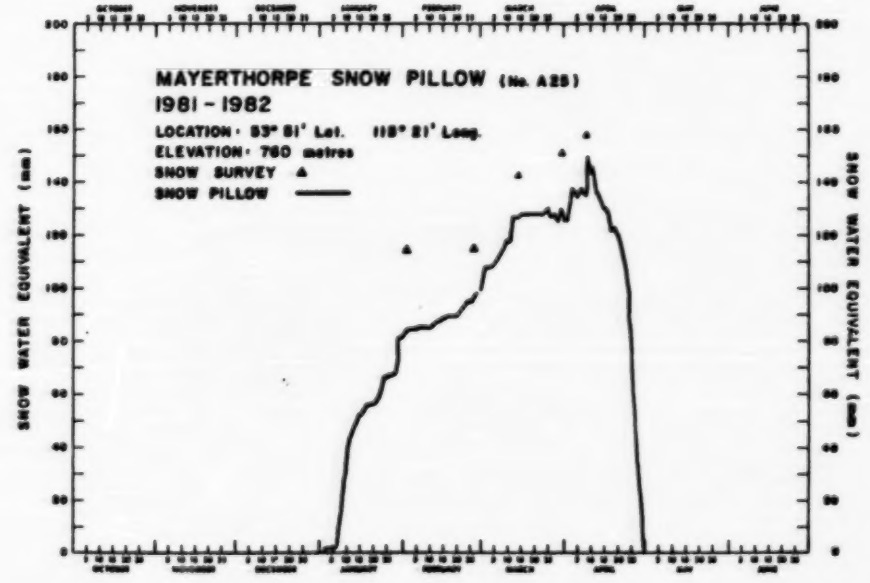
1981 - 1982

Name	Snow Course Number	Drainage Basin	Elevation (metres)
Akamina*	14Z07	Oldman	1770
Bruce	N4	North Saskatchewan	670
Fort Chipewyan Airport	A6	Athabasca	210
Little Elbow Summit	14Y18	Bow	2160
Mayerthorpe	A25	Athabasca	760
Mount Skoki	16X15	Bow	2055
Pipestone	N16	North Saskatchewan	790
Spring Creek #1	P10	Peace	720
Spring Creek #2	P11	Peace	655
Spring Creek #4	P13	Peace	730
Sunshine Village	15X03	Bow	2225
Twin Lakes	A26	Athabasca	655

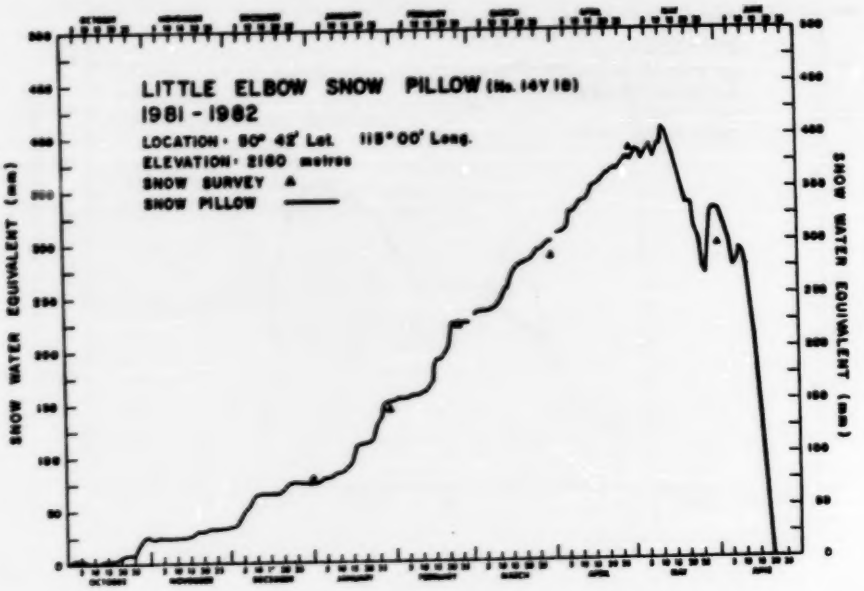
* Because of a malfunction at the Akamina snow pillow, no plot is available.

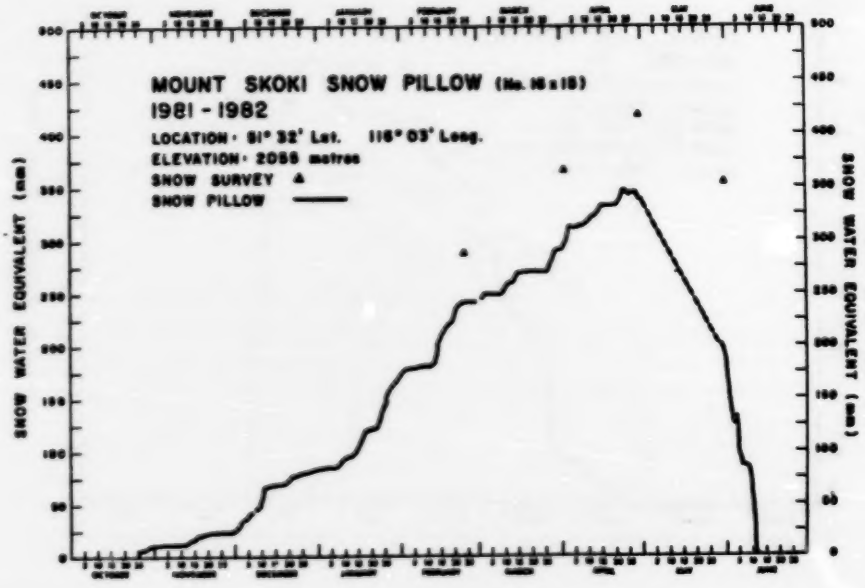
SNOW PILLOW DATA



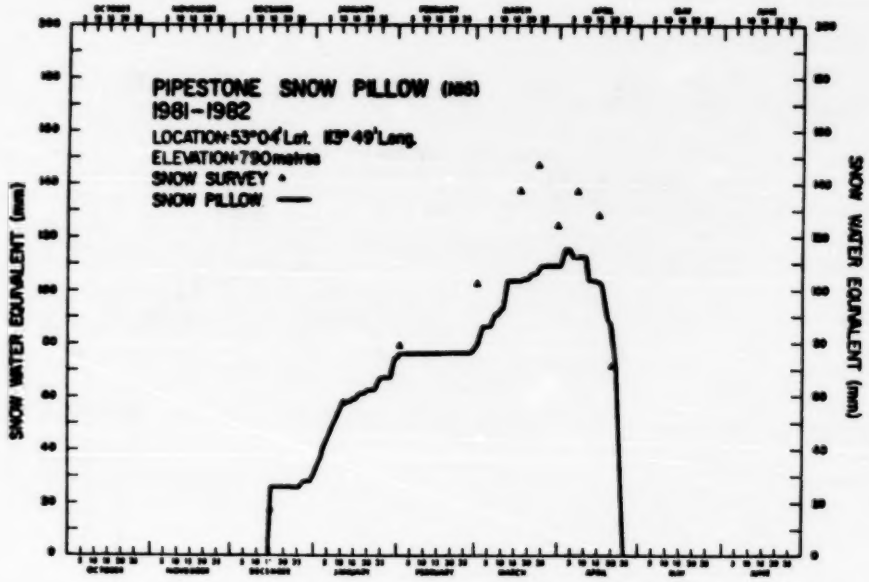

MAYERTHORPE SNOW PILLOW (No. A28)
1981 – 1982
LOCATION · 53° 51' Lat. 115° 21' Long.
ELEVATION · 760 metres
SNOW SURVEY ▲
SNOW PILLOW —
SNOW WATER EQUIVALENT (mm)
SNOW WATER EQUIVALENT (mm)

SNOW PILLOW DATA


LITTLE ELBOW SNOW PILLOW (No. 14Y 18)
1981 - 1982
LOCATION - 50° 42' Lat. 115° 00' Long.
ELEVATION - 2180 metres
SNOW SURVEY △
SNOW PILLOW ——
SNOW WATER EQUIVALENT (mm)
SNOW WATER EQUIVALENT (mm)


MOUNT SKOKI SNOW PILLOW (No. 16 x 18)
1981 - 1982
LOCATION - 51° 32' Lat. 116° 03' Long.
ELEVATION - 2055 metres
SNOW SURVEY △
SNOW PILLOW ——
SNOW WATER EQUIVALENT (mm)
SNOW WATER EQUIVALENT (mm)

SNOW PILLOW DATA



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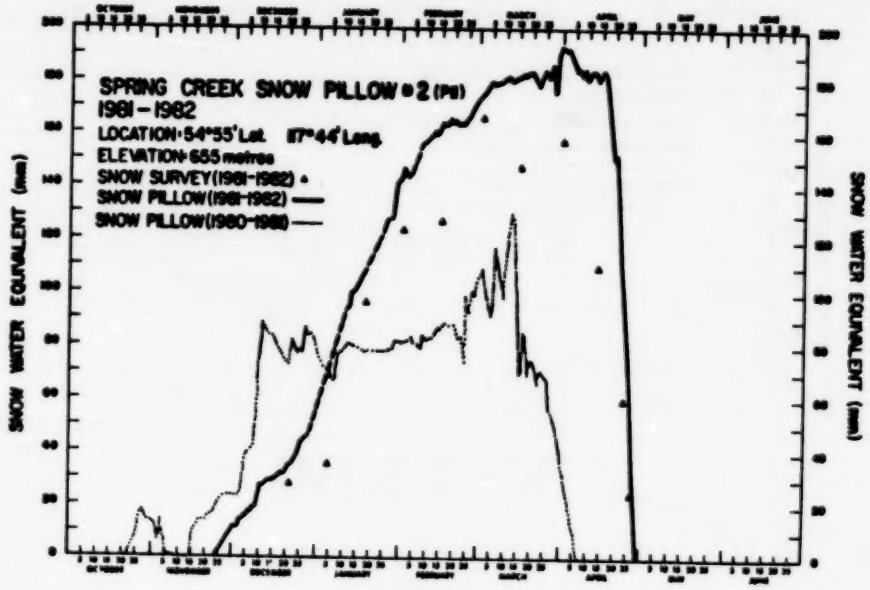
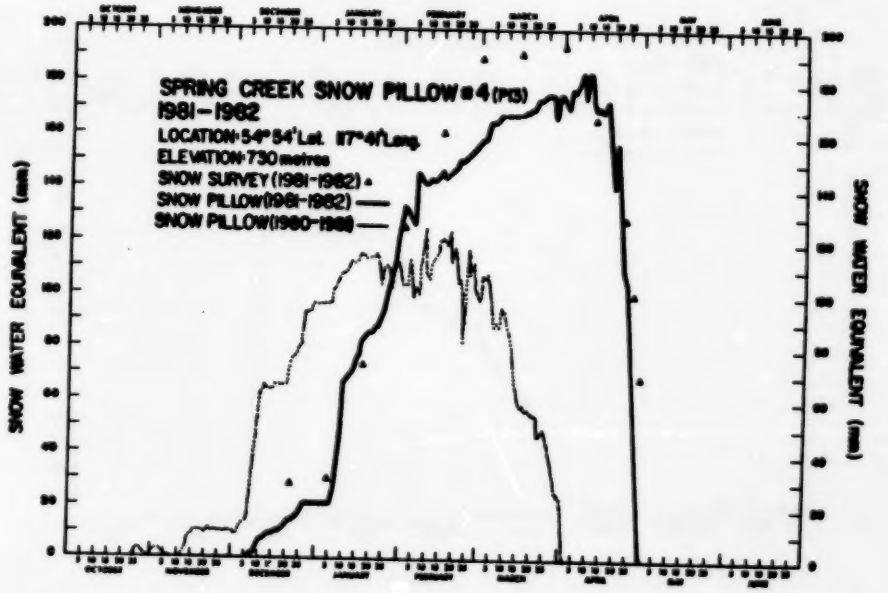
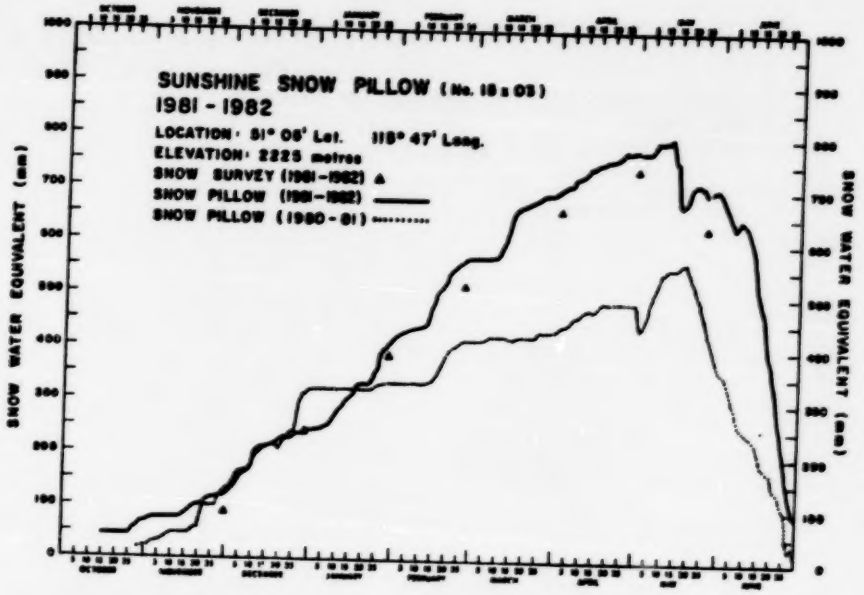
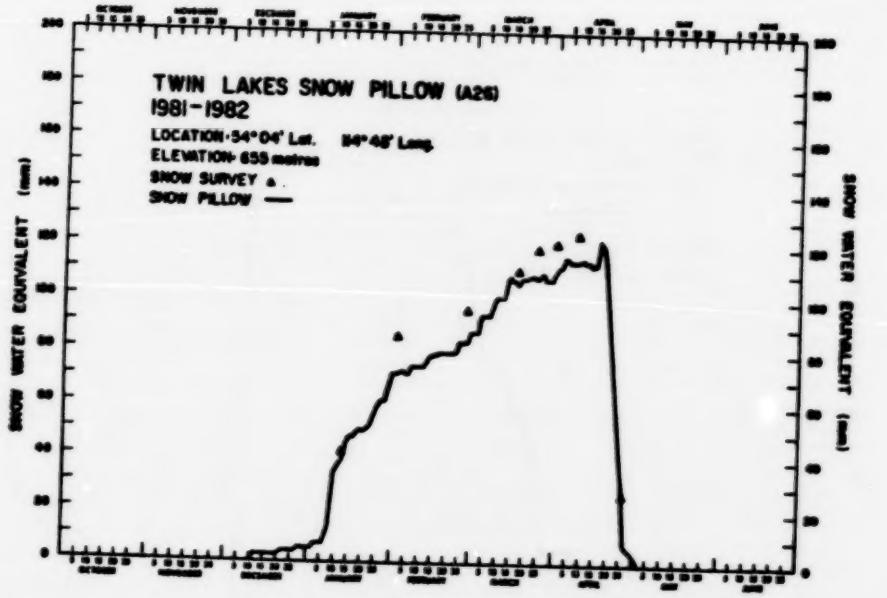

SPRING CREEK SNOW PILLOW # 2 (P2)
1981 – 1982
LOCATION: 54°55' Lat. 117°44' Long.
ELEVATION: 655 metres
SNOW SURVEY (1981-1982) ▲
SNOW PILLOW (1981-1982) ——
SNOW PILLOW (1980-1981) ——
SNOW WATER EQUIVALENT (mm)
SNOW WATER EQUIVALENT (mm)


SPRING CREEK SNOW PILLOW # 4 (P13)
1981 – 1982
LOCATION: 54°54' Lat. 117°41' Long.
ELEVATION: 730 metres
SNOW SURVEY (1981-1982) ▲
SNOW PILLOW (1981-1982) ——
SNOW PILLOW (1980-1981) ——
SNOW WATER EQUIVALENT (mm)
SNOW WATER EQUIVALENT (mm)

SNOW PILLOW DATA

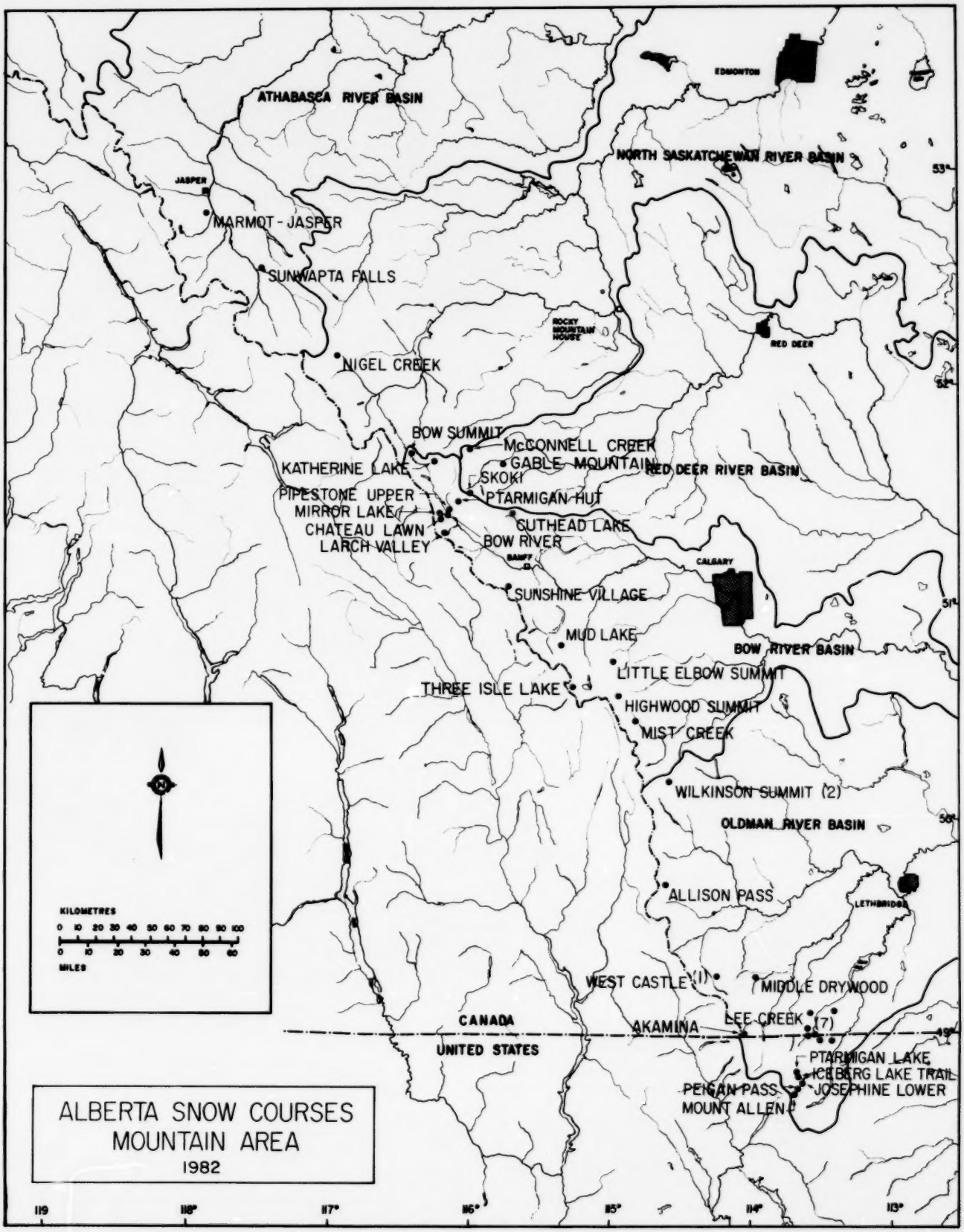

SUNSHINE SNOW PILLOW (No. 15 a 03)
1981 - 1982
LOCATION: 51° 05' Lat. 115° 47' Long.
ELEVATION: 2225 metres
SNOW SURVEY (1981-1982) △
SNOW PILLOW (1981-1982) ——
SNOW PILLOW (1980-81) .....
SNOW WATER EQUIVALENT (mm)
SNOW WATER EQUIVALENT (mm)


TWIN LAKES SNOW PILLOW (A26)
1981 - 1982
LOCATION: 54° 04' Lat. 84° 48' Long.
ELEVATION: 655 metres
SNOW SURVEY △
SNOW PILLOW —
SNOW WATER EQUIVALENT (mm)
SNOW WATER EQUIVALENT (mm)

APPENDIX B

INDEX OF

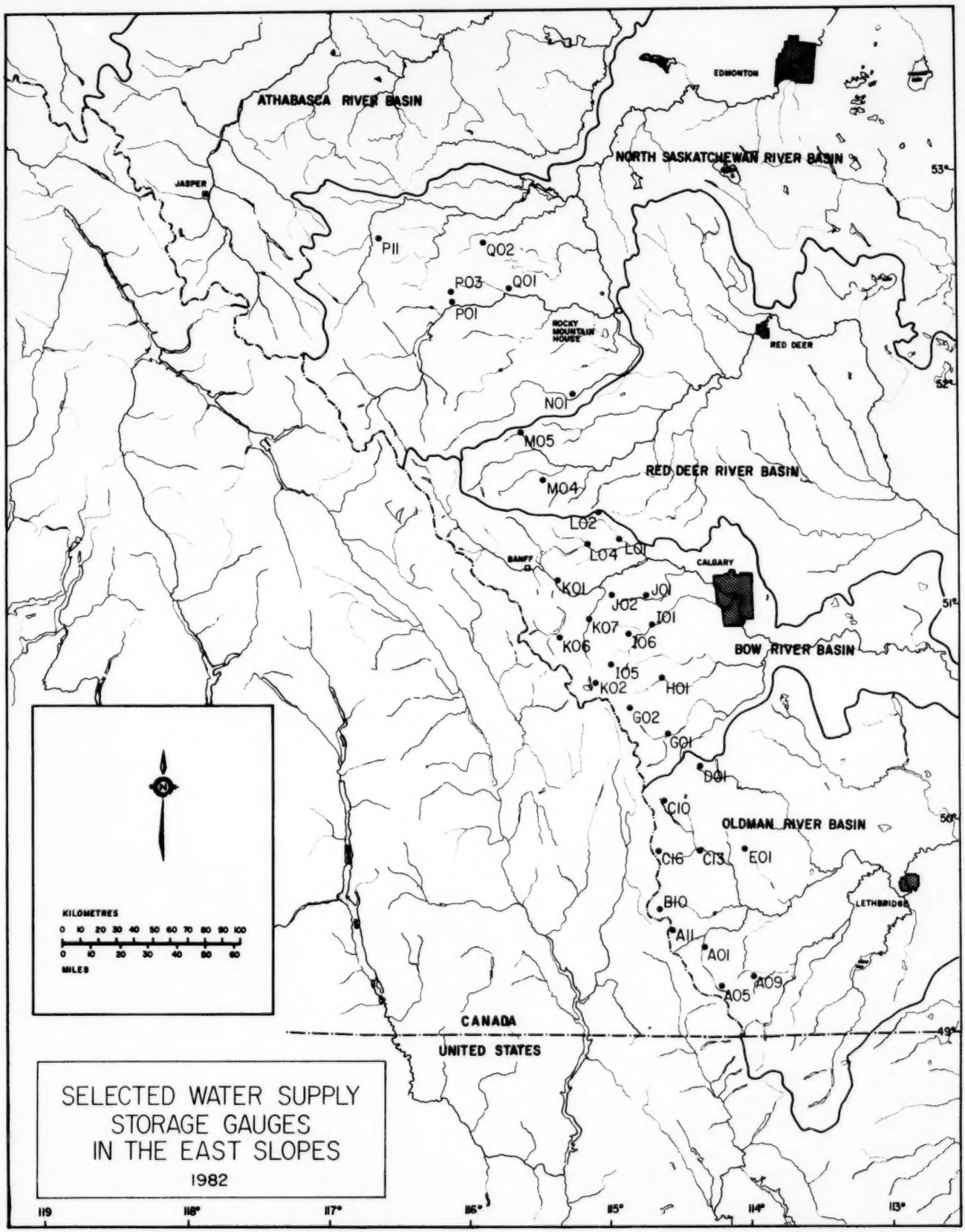
SNOW SURVEY
AND
STORAGE GAUGE LOCATIONS


ATHABASCA RIVER BASIN
EDMONTON
NORTH SASKATCHEWAN RIVER BASIN
JASPER
MARMOT - JASPER
SUNWAPTA FALLS
ROCKY MOUNTAIN HOUSE
RED DEER
NIGEL CREEK
BOW SUMMIT
McCONNELL CREEK
GABLE MOUNTAIN
KATHERINE LAKE
SKOKI
RED DEER RIVER BASIN
PIPESTONE UPPER
MIRROR LAKE
PTARMIGAN HUT
CHATEAU LAWN
LARCH VALLEY
CUTHEAD LAKE
BOW RIVER
BANFF
CALGARY
SUNSHINE VILLAGE
MUD LAKE
BOW RIVER BASIN
LITTLE ELBOW SUMMIT
THREE ISLE LAKE
HIGHWOOD SUMMIT
MIST CREEK
WILKINSON SUMMIT (2)
OLDMAN RIVER BASIN
ALLISON PASS
LETHBRIDGE
WEST CASTLE (1)
MIDDLE DRYWOOD
CANADA
AKAMINA
LEE CREEK (7)
UNITED STATES
PTARMIGAN LAKE
ICEBERG LAKE TRAIL
PEIGAN PASS
JOSEPHINE LOWER
MOUNT ALLEN
KILOMETRES
0 10 20 30 40 50 60 70 80 90 100
0 10 20 30 40 50 60
MILES
ALBERTA SNOW COURSES
MOUNTAIN AREA
1982
119
118°
117°
116°
115°
114°
113°
53°
52°
51°
50°
49°

LIST OF ALBERTA SNOW COURSES

MOUNTAIN AREA

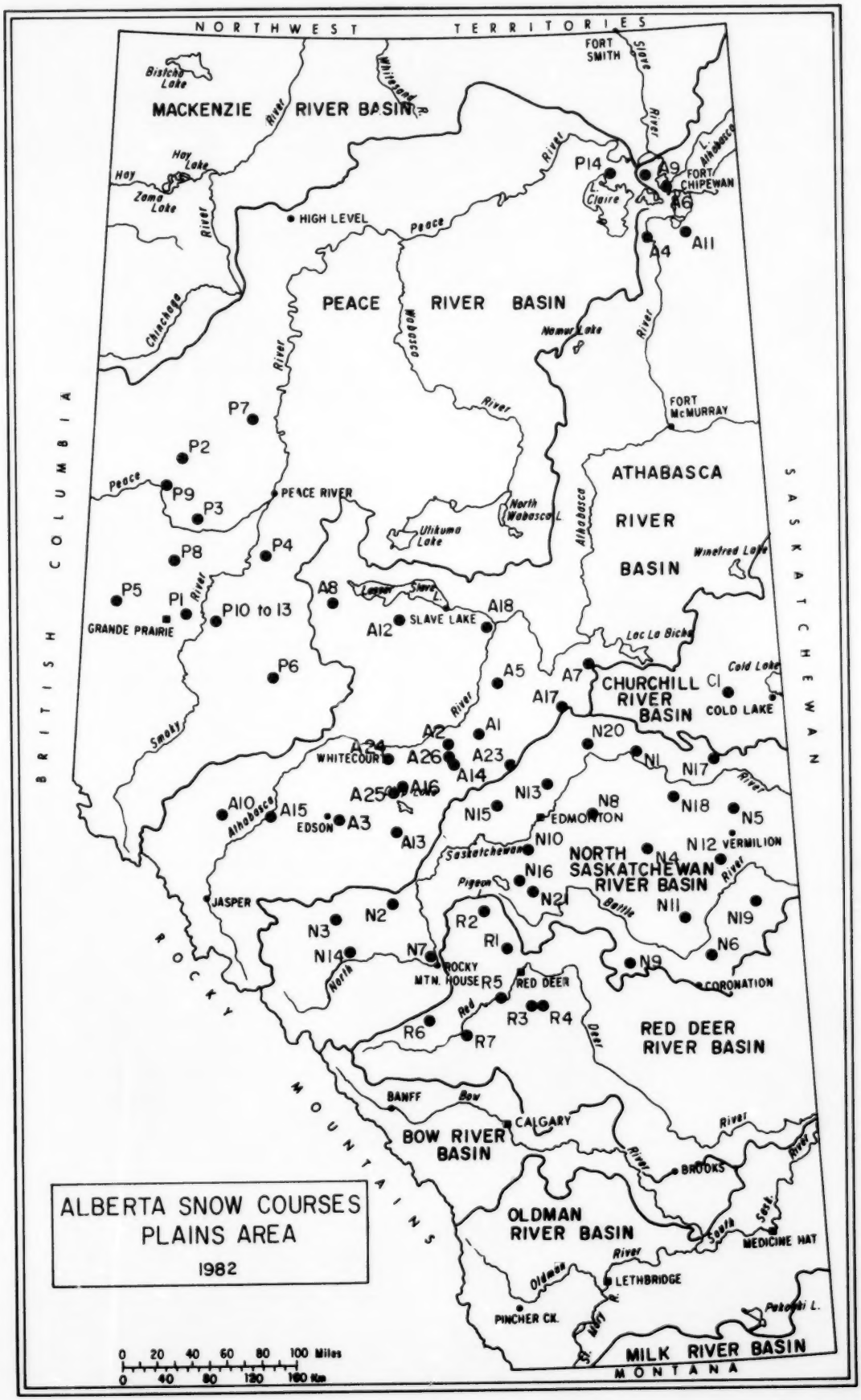
Station Number	Name	Location Lat.	Location Long.	Elevation (m)	Year Established
ATHABASCA RIVER BASIN					
18W02	Marmot-Jasper	52°49'	118°05'	1830	1970
17W01	Sunwapta Falls	52°33'	117°39'	1400	1968
BOW RIVER BASIN					
16X01	Bow River	51°25'	116°28'	1550	1937
16X13	Bow River Summit (II)	51°42'	116°28'	2030	1979
16X08	Chateau Lawn	51°25'	116°13'	1740	1940
15X04	Cuthead Lake	51°27'	115°45'	2210	1979
14Y04	Highwood Summit (Open)	50°26'	114°59'	2210	1963
14Y05	Highwood Summit (Bush)	50°36'	114°59'	2210	1963
16X16	Katherine Lake	51°41'	116°23'	2380	1980
16X14	Larch Valley	51°20'	116°13'	2360	1979
14Y18	Little Elbow Summit	50°42'	115°00'	2160	1978
16X06	Mirror Lake	51°25'	116°14'	2010	1940
14Y07	Mist Creek	50°31'	114°51'	1750	1965
16X15	Mount Skoki	51°32'	116°03'	2055	1979
15Y02	Mud Lake	50°48'	115°19'	1890	1968
16X02	Pipestone, Upper	51°26'	116°10'	1615	1937
16X09	Ptarmigan Hut	51°28'	116°06'	2180	1967
15X03	Sunshine Village	51°05'	115°47'	2225	1967
15Y03	Three Isle Lake	50°38'	115°17'	2160	1981
NORTH SASKATCHEWAN RIVER BASIN					
17W02	Nigel Creek	52°11'	117°05'	1950	1968
OLDMAN RIVER BASIN					
14Z07	Akamina	49°01'	114°05'	1770	1980
14Z03	Allison Pass	49°44'	114°37'	1980	1962
13Z02	Lee Creek Site D	49°01'	113°37'	1660	1971
13Z03	Lee Creek Site E	49°01'	113°39'	1680	1971
13Z04	Lee Creek Site F	49°03'	113°29'	1570	1971
13Z05	Lee Creek Site H	48°58'	113°32'	1650	1971
13Z06	Lee Creek Site J	48°59'	113°36'	1650	1971
13Z07	Lee Creek Site P	49°00'	113°34'	1520	1971
13Z08	Lee Creek Site Q	49°03'	113°36'	1490	1971
14Z05	Middle Drywood	49°15'	114°03'	1570	1962
14Z01	West Castle Storage (Bush)	49°16'	114°21'	1520	1962
14Y09	Wilkinson Summit (Bush)	50°12'	114°33'	1980	1963
14Y08	Wilkinson Summit (Open)	50°12'	114°33'	1980	1964
RED DEER RIVER BASIN					
15X05	Gable Mountain	51°38'	115°45'	2150	1981
16X17	McConnell Creek	51°41'	115°59'	2130	1981


ATHABASCA RIVER BASIN
EDMONTON
NORTH SASKATCHEWAN RIVER BASIN
JASPER
53°
P11
Q02
P03
Q01
P01
ROCKY MOUNTAIN HOUSE
RED DEER
52°
N01
M05
RED DEER RIVER BASIN
M04
L02
L04
L01
BANFF
CALGARY
K01
J02
J01
51°
I01
K07
K06
I06
BOW RIVER BASIN
I05
K02
H01
G02
G01
D01
C10
OLDMAN RIVER BASIN
50°
C16
C13
E01
LETHBRIDGE
B10
A11
A01
A09
A05
CANADA
UNITED STATES
49°
KILOMETRES
0 10 20 30 40 50 60 70 80 90 100
0 10 20 30 40 50 60
MILES
SELECTED WATER SUPPLY
STORAGE GAUGES
IN THE EAST SLOPES
1982
119
118°
117°
116°
115°
114°
113°

INDEX TO ALBERTA FOREST SERVICE

SACRAMENTO STORAGE GAUGE NETWORK

Gauge No.	Name	Location Lat.	Location Long.	Elevation (metres)	Year Established
CROWSNEST FOREST RESERVE					
A01	Castle Ranger Station	49°23'	114°21'	1390	1953
A05	West Castle	49°17'	114°22'	1520	1954
A09	Carpenter Creek	49°15'	114°03'	1680	1956
A11	Goat Creek	49°29'	114°34'	1860	1964
B10	Crowsnest Creek	49°36'	114°40'	1460	1954
C10	Oyster Creek	50°07'	114°40'	1830	1955
C13	Livingstone Gap	49°52'	114°20'	1420	1954
C16	Racehorse Creek	49°49'	114°38'	1920	1964
D01	Willow Creek Ranger Station	50°14'	114°21'	1490	1956
E01	West Porcupine	49°51'	114°04'	1450	1953
BOW RIVER FOREST RESERVE					
G01	Highwood Ranger Station	50°23'	114°38'	1490	1953
G02	Mist Creek	50°31'	114°51'	1750	1953
H01	Sheep Ranger Station	50°36'	114°47'	1770	1953
I01	Elbow Ranger Station	50°54'	114°40'	1400	1953
I05	Little Elbow Summit	50°42'	114°59'	2180	1954
I06	Ford Creek Summit	50°51'	114°53'	1830	1954
J01	Jumpingpound Ranger Station	51°02'	114°44'	1400	1953
J02	Sibbald Creek Summit	51°02'	114°59'	1550	1954
K01	Canmore	51°07'	115°22'	1330	1953
K02	Kananaskis Lakes	50°38'	115°07'	1680	1953
K06	Mud Lake	50°51'	115°21'	1905	1954
K07	Kananaskis Ranger Station	50°54'	115°08'	1510	1954
L01	Ghost Ranger Station	51°20'	114°57'	1370	1953
L02	Mockingbird Lookout	51°25'	115°04'	1905	1963
L04	Ghost Diversion	51°18'	115°08'	1600	1963
M04	Panther River	51°35'	115°28'	1860	1964
M05	Scalp Creek	51°48'	115°39	2040	1964
CLEARWATER FOREST RESERVE					
N01	Clearwater Ranger Station	51°59'	115°20'	1280	1953
P01	Nordegg Ranger Station	52°29'	116°06'	1370	1953
P03	Shunda Baldy Lookout	52°32'	116°07'	2080	1964
P11	Brown Creek	52°43'	116°45'	1830	1964
Q01	Shunda Ranger Station	52°20'	115°47'	1400	1954
Q02	Atlas Lumber	52°42'	115°57'	1220	1956


NORTHWEST TERRITORIES
FORT SMITH
Slave River
Bistcho Lake
MACKENZIE RIVER BASIN
Whitegrand R.
Hay River
Hay Lake
Zama Lake
HIGH LEVEL
Peace River
P14
A9
FORT CHIPEWAN
L. Athabasca
L. Claire
A6
A4
A11
PEACE RIVER BASIN
Chinchaga River
Wabasca River
Namur Lake
FORT McMURRAY
P7
P2
P9
P3
PEACE RIVER
North Wabasca L.
Athabasca River
ATHABASCA RIVER BASIN
Winefred Lake
P8
P4
P5
P1
P10 to 13
GRANDE PRAIRIE
A8
A18
A12
SLAVE LAKE
Loc La Biche
P6
A5
A7
CHURCHILL RIVER BASIN
Cl
Cold Lake
COLD LAKE
A17
A2
A1
N20
N1
N17
A24
WHITECOURT
A26
A23
A14
A25
N13
N8
N18
N5
A10
A15
EDSON
A3
A13
N15
EDMONTON
N10
N12
VERMILION
Saskatchewan River
NORTH SASKATCHEWAN RIVER BASIN
N4
N16
N21
N11
N19
JASPER
N2
N3
R2
R1
N14
N7
N6
N9
ROCKY MTN. HOUSE
R5
RED DEER
CORONATION
R3
R4
R6
R7
RED DEER RIVER BASIN
ROCKY MOUNTAINS
BANFF
Bow River
CALGARY
BOW RIVER BASIN
BROOKS
OLDMAN RIVER BASIN
MEDICINE HAT
LETHBRIDGE
PINCHER CK.
Oldman River
Milk River
Pakowki L.
MILK RIVER BASIN
MONTANA
SASKATCHEWAN
BRITISH COLUMBIA
ALBERTA SNOW COURSES
PLAINS AREA
1982
0 20 40 60 80 100 Miles
0 40 80 120 160 Km

LIST OF ALBERTA SNOW COURSES

PLAINS AREA

Station Name (=)	Location Lat.	Location Long.	Elevation (metres)	Year Established	Station Name (=)	Location Lat.	Location Long.	Elevation (metres)	Year Established
ATHABASCA RIVER BASIN									
Barrhead, North (A1)	54°16'	114°21'	670	1973	Kinuso (A12)	55°20'	115°24'	640	1973
Barrhead, West (A2)	54°11'	114°48'	670	1973	Lodgepole =1 (A13)	53°30'	115°21'	850	1961
Edson, East (A3)	53°35'	116°14'	910	1973	Mayerthorpe (A25)	53°51'	115°21'	760	1981
Embarras Portage (A4)	58°23'	111°32'	220	1974	Meadowview (A14)	53°59'	114°41'	670	1960
Flatbush (A5)	54°44'	114°05'	640	1973	Obed (A15)	53°34'	117°13'	1100	1973
Fort Chipewyan Airport (A6)	58°45'	111°07'	210	1974	Paddle River =2 (A16)	53°52'	115°19'	760	1974
Grassland (A7)	54°49'	112°41'	580	1973	Perryvale, East (A17)	54°28'	113°10'	670	1973
High Prairie (A8)	55°24'	116°25'	580	1973	Saulteaux River (A18) at Highway =2	55°10'	114°14'	580	1973
Highrock Tower (A9)	58°48'	111°33'	220	1974	Twin Lakes (A26)	54°04'	114°48'	655	1982
Hinton, North (A10)	53°32'	117°57'	1250	1973	Westlock =2 (A23)	54°00'	113°58'	700	1959
Jackfish Village (A11)	58°25'	110°56'	210	1974	Whitecourt (A24)	54°05'	115°36'	790	1973
CHURCHILL RIVER BASIN									
Bonnyville, North (C1)	54°30'	110°40'	550	1973					
NORTH SASKATCHEWAN RIVER BASIN									
Bellis (N1)	54°07'	112°05'	670	1973	Mannville, South (N12)	53°10'	111°12'	670	1973
Brazeau (N2)	52°57'	115°41'	975	1977	Morinville, North (N13)	53°51'	113°29'	700	1973
Brown Creek (N3)	52°46'	116°26'	1340	1977	Mordegg, South (N14)	52°24'	116°08'	1070	1973
Bruce (N4)	53°17'	112°04'	670	1975	Onoway (N15)	53°43'	114°10'	700	1973
Clandonald (N5)	53°34'	110°52'	640	1973	Pipestone Creek (N16)	53°04'	113°49'	790	1976
Coronation, Northeast (N6)	52°15'	111°15'	760	1973	St. Paul, East (N17)	53°59'	111°01'	640	1973
Crimson Lake (N7)	52°25'	115°02'	975	1973	Two Hills, East (N18)	53°43'	111°43'	640	1973
Elk Island National Park (N8)	53°35'	112°50'	700	1973	Wainwright (N19)	52°43'	110°37'	670	1973
Gadsby (N9)	52°19'	112°23'	790	1973	Waskatenau (N20)	54°11'	112°50'	640	1973
Leduc (N10)	53°16'	113°33'	730	1973	Wetaskiwin (N21)	52°59'	113°38'	790	1973
Lougheed, South (N11)	52°40'	111°33'	670	1973					
PEACE RIVER BASIN									
Bezanson (P1)	55°14'	118°31'	700	1973	Rycroft, South (P8)	55°42'	118°44'	640	1973
Eureka River (P2)	56°31'	118°44'	700	1973	Sexsmith, North (P9)	55°27'	118°53'	850	1973
Fairview (P3)	56°03'	118°24'	640	1973	Spring Creek Watershed Site =1 (P10)	54°57'08"	117°44'57"	720	1967
Girouxville (P4)	55°46'	117°20'	580	1973	Spring Creek Watershed Site =2 (P11)	54°55'20"	117°44'33"	655	1967
Hythe (P5)	55°19'	119°34'	760	1973	Spring Creek Watershed Site =3 (P12)	54°57'12"	117°41'22"	730	1967
Little Smoky River (P6)	54°44'	117°09'	670	1973	Spring Creek Watershed Site =4 (P13)	54°54'35"	117°41'15"	730	1967
North Star - Manning(P7)	56°52'	117°38'	490	1973	Sweetgrass (P14)	58°50'30"	111°59'30"	210	1977
RED DEER RIVER BASIN									
Bentley (R1)	52°29'	114°04'	910	1978	Innisfail, West (R5)	52°05'	114°10'	910	1973
Hoadley (R2)	52°49'	114°23'	975	1972	James River (R6)	51°54'	115°00'	1220	1973
Innisfail =1, East (R3)	52°00'	113°42'	975	1973	Sundre, East (R7)	51°47'	114°31'	1070	1973
Innisfail =2, East (R4)	52°01'	113°35'	910	1973					